

# Social networks and the national art gallery (Dublin | ... | Sofia)

*Mícheál Mac an Airchinnigh; Glenn Strong*

School of Computer Science and Statistics  
University of Dublin, Trinity College. Dublin, Ireland  
{mmaa, Glenn.Strong}@cs.tcd.ie

## Abstract

To publish is to make public. And one sense of being public is surely to be accessible? Today it is not only the writing and the images that are published formally, that is to say through official channels, but also the casual human artefacts, the chat, the blog, the quick pic, the self-made music and dance and film, and all of the latter through the medium of the social network. In the World-Wide Web (WWW), to be published is to have a unique resource identifier (URI) and usually a unique resource locator (URL). But to be visibly published on the WWW one needs to be found (much in the same way that one might be found say, 200 years ago, through the library catalogue). Hence at the very core of electronic publishing is to be found the metadata nucleus. In olden times the scholar/reader would have to travel to that place, the Library, if it were accessible, to read/study the work. Today, (s)he travels electronically to those places which are accessible. E-publication does not necessarily entail accessibility. For example, many scholarly works are behind pay walls, costs are borne by institutions of would-be accessors; someone has to pay for maintenance, security, and accessibility. Works of art are in a peculiar and particular category. A work of art is considered to be unique, by which one understands that there is no other copy, properly understood. There may be thousands of prints of the unique piece authorised. But the digitization of an artwork forces a categorical change. The digital artwork is, by nature different. It can be seen, not by reflected light but by transmitted see-through light! In this specific regard it is completely other vis-à-vis the book qua text. In this paper we consider the typical state of the “digital art” as e-publication and explore the extent to which such art is freely accessible to the public, whether on social network or otherwise, with respect to four chosen “National Art Galleries” on the circumference of the European Union.

**Keywords:** access; art gallery; augmented reality; el-pub; folksonomy.

## 1. Introduction

Let us imagine a time of scarcity of trees, of materials that might be used to make paper? Let us imagine a time in the not too distant future when all publication is necessarily electronic? Let us imagine a time when great paintings will be electronically freed from their museums? Let us imagine... ?

«The world has changed recently, yet again, in January 2010. The Guardian Newspaper [1], famous for its establishment of an online presence [2], that was distinctly different from its physical newspaper print presence, abandoned its Technology Insert that always appeared every Thursday. There is, of course, the now much richer web presence that provides the Technology News, all the time, around the clock, independently of the newsprint presses.

Today, “Google puts off launch of mobile phone in China” [3], and yesterday, “Apple confirms date for its 'event': we know it's a tablet, but what else?” [4].

At a slower pace one can read the Technology Editor’s blog [5]. Want to keep up to date? Then get the tweets [6].

[mihalorela](#) EIPub2010 has not yet happened; signed up to learn to tweet for it before 16-18 June, Helsinki. Maybe will have iTablet with me... then? :)» [Mihal Orela 2010-01-19].

The foregoing extended block quotation is a conceived, imagined, *mashup* [7] of text from Charles Arthur, editor of the online Guardian Technology section, and a related *tweet* on the same date by a *follower* of Charles Arthur commenting on the possibility that Apple’s January 2010 event might just be related to the (un)expected iTablet aka iSlate. On the 19<sup>th</sup> of November 2009, Charles Arthur gave advance warning of this revolution in the making:

“What you are holding in your hands — assuming you’re reading this in print form, which a substantial number of you are — is a collector’s item. Guardian Technology, in its print incarnation, is to cease publication. The last edition will be on 17 December” [8].

Since the date of the *mashup* [7] one now knows that the mooted “Apple device” for e-publications (such as newspapers) has the simple name of iPad.

In this paper (destined in context to become an e-paper) we shall present state of the art “electronic publication” with respect to the Fine Arts, using illustrations/examples from a “National Art Gallery” (NAG) at the “extremities” of Europe: to the west, the National Gallery of Ireland (NGI), Dublin [9], to the east, “Национална художествена галерия” (National Art Gallery), Sofia [10], to the north, Valtion Taidemuseo, (we focus on the Ateneum), Helsinki [11], and to the south, Museo Nacional del Prado,

Madrid [12], thus avoiding the “usual suspects” in Art discourse. Before proceeding let us mention our use of the buzz-word. For “electronic publication” we will use the abbreviation el-pub (or elpub). Naturally it corresponds with the name of the conference series. But more importantly, it has significant ambiguity. In other words, el-pub is multi-referent on the Web. Specifically, due to the treatment of non-letters, el-pub may be interpreted as “el público” in Spanish; Pub in many languages is taken to be a drinking establishment, and extracted from the more formal English name “Public House”. Similarly, we introduce here the abbreviation soc-net (socnet) for social network. A quick search will show just how “popular” and ambiguous this buzz-word is.

The deliberate focus in this paper, is Art in the classical and traditional sense. In particular, we include photos of paintings, sketches, drawings and photos of sculptures; we exclude photos per se. “Art is notoriously hard to talk about” [13] and if it is hard to talk about it, or even to write about art, naïvely (i.e., not formal critical discourse), then we may pose a basic research question. Is it harder or easier to ontologize the art rather than to talk about it? And having ontologized it, how easy or difficult is it for the machines to make sense of the ontologization? Let us make a first pass to test this hypothesis by 1) restricting ourselves to the Dublin Core 15 tag elements [14] and 2) exploiting folksomonic tagging such as used in Flickr. Furthermore let us use a simple tool, DCdot [15], to extract the Dublin Core metadata and present it in a readable fashion. Our research will show just how little has been accomplished in just over 15 years [16]. However, our main focus in this paper will be elsewhere: on the electronic access to the Art, whether *in situ* or on the Web.

With respect to Art in situ, we note the potential for wireless devices to be used to inform the “visitor” [17] to an art gallery/museum, whether the technology be classical RFID [18] or NFC [19]. An Art object appropriately tagged in its immediate environment would become an entity within the “Internet of Things” [20]. By environment we mean primarily, for example, that for a painting in a given physical setting, there would be at least 4 wireless tags on: the canvas, the frame, the wall labeling (etiquette), and the wall itself. Use of a wireless device such as a mobile phone would facilitate reading of the wall label in one’s own language, for example.

One year later after the formal submission on the “Internet of Things” to an EU “request for response”, we found that there was a company called Plink [21] which released an Android app [22] called “PlinkArt” and which works just as we have theorized. They have a server-side database with around 50,000 works and have plans to pilot the app as a replacement for the

"clunky tape-recorder audio tours". They also have a developer API coming, they say, that allows other apps to link in to their server-based recognition engine. Plink appears to be the output of the PhD thesis in machine vision of the two lead developers, Mark Cummins and James Philbin. A version of PlinkArt for the iPhone is expected soon (perhaps in time for the Conference itself in June). And (perhaps no surprise) Google itself subsequently released a similar sort of app with the appealing title of "Google Goggles" [23] for the Android phone, which brings us right back to the issue of "Google and China and the Google phone world" with which we started. Finally, a surprise, just as we went to press Nokia announced its own lookalike app by the name of "Augmented Reality" with features, in some respect, similar to those of Google Goggles [24]. Let us now turn our attention to real electronic publishing within the established formal Art world.

## 2. Methodology

How can one know something of the effectiveness of the use being made of an electronic publication (el-pub) within a social network (soc-net)? And how might one distinguish between effectiveness and simple popularity? By effectiveness we mean the taking root of the el-pub within the distributed community. For example, the circulation within a soc-net to certain trusted Wikipedia (WP) pages would be a strong indicator of effectiveness. The primary soc-net of Wikipedia itself consists of the registered editors. The first author is a member of this WP soc-net and belongs to "Wikipedia language communities" in English, Bulgarian, French, German, and Irish, meaning he edits pages in these languages.

Our research methodology is characterized quite succinctly by the well-known phrase:

"By indirections find directions out" (Act II, Scene 1, Hamlet)

This is a theatrical or artistic way of explaining that we belong to the great methodological school before the "time of the separation of the arts and sciences" [25]. Or... to put it differently we are here dedicated to reunite the "Sciences" with the human reality of the experience of most humans, the people, the non-digitally connected, the people who feel at home with the... arts, with the feelings of life.

Scenario: — In keeping with the general research strategy in the domain of the digital re-discovery of culture [26] · (DrDC), one works outwards from a grounded scenario (a playlet, in other words) which consists of a short one

page backstory... For example, one might first come across the art work of Hieronymus Bosch: "The Garden of Earthly Delights" as an illustration in an art book, such as "How to Read a Painting" [27], or on the Web through Wikipedia [28], or directly through the web presence of the holding gallery, "Museo Nacional del Prado" [12], or even courtesy of Google [29]. The visual impact of the art work usually provokes a desire in the viewer to read up on the background and to ask oneself fundamental questions: who is the artist? Why did (s)he paint it? When was it done? For whom was it done? Where is it now? And so on. In the context of the art book cited above, many of these questions are answered. The backstory is given on two facing pages. In the English version of the text (the original was Dutch) there are 4 key (words/phrases) marked out in bold font and which we list here in order top to bottom, left to right: "image of paradise or a world of debauchery", "union of Adam and Eve", "paradise", "musical instruments". These key phrases or tags clearly belong to a folksonomy. They are formally recorded in the Index of the book in order for the reader to see/lookup the "persons, themes, or motifs referred (or alluded) to in the titles of the illustrated works" p.369.

One of the most significant features of the "old-fashioned" art book is simply that high quality images with accompanying erudite text opened a door to another world. In the case of the text and example cited, there was the added surprise of accounts of two more triptychs by the same painter: "The Temptation of St Anthony" (key words/phrases: "Anthony", "trio", "kneeling hermit", "naked woman") p.96-7 and "The Haywain" (key words/phrases: "Adam and Eve", "central panel", "on top of the cart", "risen Christ", "pilgrim") p.99. Today, the art enthusiast of the works of Hieronymus Bosch will find a (complete?) list of his paintings on Wikipedia [30]. In the context of the electronic publication of artworks and associated commentary and folksonomy within the social network community in 2010 it will not be surprising that we rely on Wikipedia as a substantive part of our research methodology.

Wikipedia · (EN and at least one other language): — Searching for and finding relevant information is a difficult task in any medium. For books, the solution was/is the provision of an Index (in addition to any front matter such as chapter and/or section headings). For the Web (aka Internet) it is the chosen search engine. Where once one relied on the encyclopedia (English, French, German,...) for terse erudite scholarly information, today one is more likely to go first to Wikipedia. The soundness or otherwise of Wikipedia is not the issue. In a Social Network context, it has proven itself to be an el-pub resource consulted by (very big number of?) people every day, and not only in English.

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For example, in our context of National Gallery [31], there is a page for the National Gallery of Ireland (NGI), in English, as expected; nothing in Irish; the other languages, for which there is a description, are: [Català](#) (stub) [Español](#), [Esperanto](#) (stub), [Français](#) (stub), [Italiano](#) (stub), [Nederlands](#) (stub), [Русский](#). Those pages which are “inadequate” with respect to content are marked here as (stub). Excluding stubs, we conclude that the NGI has significant presence in 2 languages other than English. There are certain measures available by which one might wish to judge the page. Details are given on Wikipedia. For comparison El Prado has a page in (roughly) 39 languages.

Dublin core metadata: — There are 15 key tags that one might want to use for e-publications, whatever the nature of these latter might be. Our research has already shown that in the category of Newspapers online, very few of this basic set of 15 metadata tags are ever used. Notice we speak of “newspapers online” and not “online newspapers”. It seems to be the current paradigm that newspapers “go online” while retaining their existing print production form. It is our considered opinion that the burden to produce the Dublin Core metadata for each section of each issue is too great either from a commercial or a practical point of view. An alternative hypothesis might be, simply, that nothing out there makes use of such Dublin Core metadata when it comes to search, to access! The trend has been for news aggregators to come to the fore, the greatest of which is (still) Google.

Folksonomy: — Instead of the exploitation of the use of formal metadata tags, such as is used in the Dublin Core, it appears to be the case that informal folksy tagging has predominated. This is tagging by social networkers. From the point of view of Art, the social networker’s folksy description of a particular piece will be dramatically different from the description given by that one with the “trained eye to see.” One of the key texts that developed this “Ways of Seeing” of Art was produced as a TV programme on the BBC [32], episodes of which are publicly available on YouTube [33].

Augmented reality personal devices: — first was the iPhone which was not a phone at all! The basic character/nature/role of a “mobile phone” was changed. There were earlier intimations of what was to come; one of the key additions was the camera. Who would have imagined a telephone that would take pictures? And yet looking back at the initial beginnings of the mobile phone, we now realize that few if any predicted that the main purpose of the phone would be to use a certain redundancy in the mobile signalling, to wit the coming into being of “text messaging”. In 2010, another revolution is taking place — the camera on the phone is connecting with pictures of the

world and augmenting the touch/display screen with another layer of hypertext reality.

Given the nature of the iPhone (app) it is no longer surprising to note the kinds of marriage between the el-pub and the soc-net. In the context of EIPub 2010 we note the ART app [34] which provides images of paintings in the public domain and supplies corresponding biographies of artists, incorporating information from Wikipedia, using the Creative Commons Attribution-shareAlike License. One has access, in the palm of one's hand, to the art of Vincent van Gogh, Hieronymous Bosch,... There are currently "204 artists" represented. (To a certain extent it appears that one may remove or add artists from the list at will). A closer examination shows that although Marc Chagall (1887-1985) is listed, there are no paintings in the gallery. One is invited to "add them oneself" using "this button in browser to save images to your gallery", with suggested links to 1) Wikipedia.org, 2) Artst.org, 3) ABCGallery.com, and 4) ShowMeArt.info. A good social network test might be to obtain some "freely available" Chagall images of painting, add them to one's own gallery, and then see if they become available to others with the same app, either automatically or upon request.

### 3. The Experiments and the results

We now present some of the details of the 4 experiments that we carried out. Each experiment is introduced with a different type of backstory. For the National Gallery of Ireland the backstory is built around a specific Exhibition of Finnish art, deliberately chosen in order to ground the paper with respect to the location and culture of the hosting city of the EIPub 2010 conference—Helsinki. For the National Art Gallery in Sofia our backstory ties the Art of the Slav to the Language of the Slav, and so also to the tradition of the Byzantine Art. It seemed natural that Google Earth would play the major role in the backstory for El Prado in Madrid. Lastly, to complete the "grand tour", we return to the Ateneum Museum in Helsinki where we needed to construct a backstory that would provide closure for our work and at the same time provide breakout for further experimentation and research into the state of the other National Art Galleries (currently listed on Wikipedia in 2010).

Scenario 1: The National Gallery of Ireland (Dublin, Ireland).

Backstory: From 8<sup>th</sup> November 2008 until 1<sup>st</sup> February 2009, there was an exhibition of *Finnish Art*, organized in collaboration with the Ateneum Art

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Museum, Helsinki [11], entitled "Northern Stars and Southern Lights: The Golden Age of Finnish Art 1870-1920" [35]. On p.53 of the published catalogue one can see a photograph of the painting *Virginie* (1883) by Albert Edelfelt, Cat. 28. The Catalogue number is an index to p.115 where further information on the painting may be read:

"Signed and dated: A. EDELFFELT/PARIS 83;

Oil on canvas, 73.5 x 92.5 cm;

Joensuu Art Museum, Joensuu, JTM 71;

Bequest 1962, Arla Cederberg collection.

A google search for "Albert Edelfelt" will lead to a brief biography [36, 37] and the art enthusiast will eventually obtain some idea of what the actual painting looks like [38], in this case found on Flickr.

The story told is that of the classical tale in the context of Art. Specifically, physical presence, both of the painting and the observer, are required. This is the way it always has been. If the (modern) Art Gallery has "easy" access to "professional" publication facilities and sufficient resources then a record, a book with full colour plates, can be produced and sold to the interested art viewer. The National Gallery of Ireland excels in this way.

However, in the context of Social Networks, one now needs to examine to what extent said Gallery and Collections have virtual presence. In other words, what is the current state of its electronic publications? On a scale 1 to 10, the Gallery gets 1. To "see" what images are available is practically non-existent at present. We are aware that extensive "computerization of the Art Work" is underway, since at least two years and it would not surprise us were the job to be completed by the time EIPub 2010 unfolds in June. On the other hand the truly persistent Networker with a passion for art will note that "In September 2010, the National Gallery will present an exhibition celebrating the Dutch seventeenth-century artist Gabriel Metsu (1629-1667) and his exquisite scenes of daily life, which rank among the finest of the Dutch Golden Age. It will bring together some 40 of his paintings and drawings from public and private collections around the world. An accompanying catalogue will be published, edited by Dr Adriaan Waiboer, NGI curator of the exhibition and author of the catalogue raisonnée on Metsu. Following its showing at the National Gallery of Ireland, the exhibition will travel to the Rijksmuseum, Amsterdam and on to the National Gallery of Art, Washington."

There are two thumbnail images given: 1) Man writing a Letter, c.1664-1666, 2) Woman reading a Letter, c.1664-1666. For the record (2010-04-08), Dublin Core subject metadata is "Press Release; Exhibitions; Johann Zoffany (1733-1810; 13 MARCH - 25 JULY 2010; Taispeántais; Pierre Bonnard

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(1867-1947; FORTHCOMING EXHIBITIONS; Talks & Tours; Gabriel Metsu 1629-1667 4 SEPTEMBER - 5 DECEMBER 2010; Acquisitions 2000-2010; Exhibition Catalogue; Roderic O’Conor (1860-1940; Taking Stock; Gabriel Metsu (1629-1667”

The Social Networker will quickly find that there is a website dedicated to Gabriel Metsu [39] on which there are reasonably high-quality images of 33 of his paintings. It is from this website we learn that the two paintings with thumbnails shown on the NGI site belong to the NGI Collection. Now the issue for our e-times becomes the nature of the quality and source of the “digital images” and their accessibility whether on a large high quality display computer or a small high quality mobile device.

Scenario 2: The National Art Gallery (Sofia, Bulgaria).

Backstory: “Orthodox painting has its own peculiar language... (today) impenetrable to the understanding of the worshipper as well as to the common spectator... this subordinate function of the landscape only characterizes the starting of its understanding.” [40]

We would like to illustrate one aspect of this concept of the “landscape” in the Orthodox painting. We choose an icon from the late 16th century (originally from Nessebar) and now in “The Crypt” of the National Art Gallery Sofia [41]. A full color plate is available [40, 42 Icon 50]. The landscape aspect in question is the “architectural detail of Jerusalem.” Unfortunately, although there does not appear to be any picture of the Icon publicly available, there is a photo of the said architectural detail [43].

A detailed analysis of the current Web site of the National Art Gallery, Sofia (NAGS) [44] will reveal a considerable amount of inconsistency between the pages in Bulgarian and the “corresponding” pages in English. Indeed it is only in the last six months or so that 65 images of paintings from its collection became officially publicly available. These can now be seen also on the Social Network Flickr [45]. There is considerable difference between the ways in which the paintings are presented on the official web site and on Flickr. In the latter, the image occurs once (uniquely) with information given in both Bulgarian and English. In addition there is a link back to the two sources on the official site. In contrast, the official Web site is divided linguistically (Bulgarian and English), clearly a significant technological failing. (At the time of writing (2010 April 8), the picture [46] is upside down at <http://www.nationalartgallerybg.org/index.php?l=55&id=43> ).

On February 10, 2010 the Bulgarian Cabinet announced a major re-alignment of the “Art Museums” of Sofia: “Cabinet approved a proposal

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presented by the Culture Ministry for four metropolitan museums, a ministry media statement said on February 10 2010." [47]. In the light of this information, it is difficult to foresee and assess the nature of forthcoming National Gallery el-pubs. On the other hand, the 65 images which are now on Flickr may give rise to interesting mashups of all kinds.

#### Scenario 3: Museo Nacional del Prado (Madrid, Spain)

Backstory: One of the most interesting surprises of 2009 was the announcement that anyone could use Google Earth to travel to El Prado (There are two places in Google Earth with such a name.) and see 14 of its paintings in exquisite detail [29]. This set of 14 was a subset of the 15 images already available online [48]. The missing image is readily explained. It is a photograph of a sculpture "Offering by Orestes and Pylades (San Ildefonso Group)", not a painting [49].

El Prado avails of the Social Networks: Facebook and Twitter [50]. In other words, "Social Networks" is an official and explicit part of the Museum's presence online. The first author is signed up on both. The language is unsurprisingly, Spanish.

The DC data for the sculpture page [49] is extensive.

The DC Subject or keywords: Museo del Prado; Prado; Museo; Madrid; España; Spain; Velázquez; Goya; Tiziano; Rubens; Juan de Flandes; El Greco; Ribera; Fra Angelico; Rafael; Tiepolo; van der Weyden; el Bosco; Meninas; la Crucifixión; el caballero de la mano en el pecho; el sueño de Jacob; el tres de mayo de 1808; el 3 de mayo de 1808; los fusilamientos en la montaña del Príncipe Pío; la Anunciación; el Cardenal; el emperador Carlos V a caballo en Mühlberg; Inmaculada Concepción; el Descendimiento; el Jardín de las Delicias; las Tres Gracias; Artemisa; ofrenda de Orestes y Pílates; el arte de educar; tienda prado; holandeses en el prado; la obra invitada; Richard Hamilton; Las hijas de Edward Darley Boit; John Singer Sargent. Whether or not this choice of DC Subject/keywords is appropriate for this page is a matter of judgment; our judgment is NO! In other words, it is clear to us that the Dublin Core data used is generic! It is applicable to the entire web site; it is not specific to the web page!

The DC Description data: página web oficial del Museo Nacional del Prado (Madrid, España). Información sobre visita al museo, obras maestras, colección, exposiciones, actividades, educación, investigación, enciclopedia, la institución, sala de prensa, acción corporativa, empleo, licitaciones

The DC Date: 2009-09-15

Our judgment? This is a superb combination of Museum Art and

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Social Networking. It goes without saying that access to this great Art Gallery via Google Earth is a first in World History? But, in reality, all that Google Earth gives to the experience is a virtual geographical surrounding... for the Art.

#### Scenario 4: The Ateneum Museum (Helsinki, Finland)

Backstory: "The exhibition focuses on the cultural life of young women in 1910s Helsinki through the eyes of writer and critic L. Onerva (1882–1972) [51]. She studied art history at university, lived on her own, enjoyed the cultural scene of the city, had an active social life, got married, ran away, got divorced, and had a secret affair. She made her living and supported her writer's career by teaching and translating, and above all by journalism and art reviews. In this exhibition, Onerva introduces us to her Helsinki: art galleries, theatre premieres, films, cafés, restaurants, concerts, and other social events. She also reveals the flipside of an independent life: debts, limits to her freedom, and moral judgment. The exhibition features plenty of art from the era, from Ateneum's own collections as well as other museums. Pioneers of early Finnish modernism, such as Helene Schjerfbeck, Sulho Sipilä and Yrjö Ollila, depicted modern man and the urban culture of the time. The curator of the exhibition is PhD Anna Kortelainen. In connection to the exhibition there will also be a book coming out, published by Tammi."

We will be at EIPub 2010 in Helsinki. We will be able to see the Onerva exhibition. We will be able to demonstrate "live" the interplay of Social Networks and the (Finnish) National Gallery, 16-18 June 2010. There is a Wikipedia article on L. Onerva and although it is currently available only in Finnish, accessing it through the Chrome browser permits instant translation into English (and there are the usual sorts of blunders one expects from such automatic machine translation; but one can grasp the sense of the original Finnish text).

In comparison with the National Gallery of Ireland, the Finnish National Gallery is outstanding with respect to its e-presence [52].

## 4. Discussion and Conclusions

In the paper we have attempted to blend the static with the dynamic. We have sought to bring together the classical "this will appear in print" type of material (ordinary pub type)—dated instantly at the time of release, whether in paper copy form or as an el-pub (just like ordinary pub type in modern

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medium). Such static forms then become a matter of public record—history. At the same time we wished to express the dynamic, to note that the technology unfolds continuously in our times. We wished to indicate this sense of the dynamic by the use of present and future tenses. The core of that dynamic was grounded in the 4th Scenario above on the “Onerva Exhibition,” already opened in the Ateneum, Helsinki (2010 March 25) and with a promise to illuminate this text in the EIPub conference in the same city two months later.

In a similar way we wish to make the current text “dynamic-like” by referring back to the technological developments announced and unleashed circa January 2010 and reported on in the introduction. We do not engage in futurology. Rather we wish to discuss the future of the Social Network and the (National) Art Gallery within the context of the Art-sensitive mobile devices.

Technology: The computer science and engineering

In many Art Galleries one is allowed to take photographs provided that the “Flash facility” is turned off. In such galleries individual art works might be tagged by the “universal no photography allowed for this work” icon of a camera with a red X. In many Art Galleries photography is strictly prohibited. In most Art Galleries photographs may be permitted by application in advance and the signing off of a memorandum of agreement.

But we are currently researching into the use of the camera phones which “capture” the image of the picture, not as photograph as such, but rather as image to be recognized in order that it may be identified. This falls into the category of content-based image retrieval, a computer vision problem in which a program is given an input image of some subject and attempts to locate further images of the same subject in a collection. The difficulty of this problem is clear; lighting conditions, camera angles and perspectives will likely all be different in the images. Let us imagine 3 people with camera phones standing side-by-side (with usual comfort zone separation between them) in front of a picture, such as Carravagio’s “The Taking of Christ” (1602) [53] in the National Gallery of Ireland? The perspective view of each will be different. The computer vision technology must facilitate such “minor” differences in the view. Algorithms in this field usually rely on identifying invariant elements (“interest points”) in the image using a variety of techniques [54-56]. A compounding difficulty in some domains is the reality that many images of different real-world scenes contain incidental similarities due to repeated manufactured elements. Similar such elements are

often a constituent part of Modern Art. For example, the works of Bridget Riley rely extensively on repeated elements [57].

This last point of repeated elements is a particular concern in the field of robot navigation; work by Cummins [58, 59] presents an improved technique for allowing a robot navigation system to take observations (images) of the environment and assign probabilities that any two images had been taken at the same location, and thus recognise its own location. The author of this work noted that "Our model is also applicable to some types of image retrieval task." [59] Indeed, "this author" is now the author of the PlinkArt application for Android-based mobile phones, which makes use of the camera on the mobile device to capture an image of an artwork. The image is then processed and uploaded to a remote server where image retrieval is performed and attempts to identify the original artwork are carried out. The mobile device can then display relevant information.

A similar approach is taken by the Google Goggles application (also available for the Android platform). This particular application is more general in its reach. It also attempts to identify books and DVD's (by cover), landmarks, corporate logos, and a number of other elements. In this application domain the presence of a large and well categorised corpus seems to be critical to the success of the application [60, 61].

We conclude with a brief short story. The first author made an appointment with the Director of the National Gallery of Ireland in order to discuss some of the technical details concerning the digitization of the Gallery's Collection, for this paper. The meeting was subsequently cancelled. Unfortunately, the Director had to go to Rome "with the Carravagio" — a colloquial name for famous painting "The Taking of Christ (1602)" for an exhibition. One deduces by the phrase "with the Carravagio" that the National Gallery of Ireland has just the one work by him. It was the time, if memory serves well, when the Catholic Bishops of Ireland had been assembled by the Pope to discuss the major problem of the handling of clerical pedophiles in the country. The painting itself is very big. Fortunately a digital copy of the painting is available under Creative Commons Licence at Wikimedia Commons. Consequently, the first author has a copy (as well as 54 other digital images of Carravagio's works) on the iPhone. These el-pubs of Art are everywhere on the soc-nets. And now as we go to press (2010-04-13) it has just been announced that Plink has been acquired by Google and consequently PlinkArt will be absorbed by/within Google Goggles.

## Notes and References

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