INFORMATION TECHNOLOGY AND THE ART MARKET
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Information technology (IT) has resulted in innovations in many areas of life. What's new isn't the IT details, but rather their effects on the respective market or context. Does a band really need a record label to distribute their music? Not with the required IT, of course. Platforms can provide MP3s, the marketing is included, and the band can decide itself whether and with which means they would like to make money.

Until now, IT has not pervaded the art market. Gradually, galleries are presenting themselves in the Web, artists are distributing newsletters, and auction catalogues are increasingly going online with bidding options. But there are no widespread platforms that provide innovative services for the art market.

ART MARKET

On the art market, money is exchanged for works. On the one side, collectors and institutions purchase, and on the other, producers provide work. Usually, commerce mediates between them. In the form of galleries, commerce ensures a liquid market between artists and buyers, and as art dealers or auction houses, between owners of art. The size and segmentation of the art market is often perceived erroneously. News reports feature auction records in the double-digit million range. For the general public, the art market appears to be something very exclusive for the super-rich. This process is completely opaque for outsiders, with "anonymous bidders" purchasing works over the telephone, and "large collectors" attracting major media attention with private museums. A 2010 study conducted by the European Fine Art Foundation TEFAF provides extensive statistics on the global art market[1]. Two kinds of players divide the market: 45% of all transactions are conducted by auction houses, and 55% by commerce. If we use 2008 as a reference year – this year has the most complete figures – then the average hammer price at auctions in Germany was just under € 4,200. This is relatively low in a European comparison – Great Britain heads the list at about € 56,000. From 2008 auction sales in Germany totalling 454 mill. euros, a minimum level of approximately 108,000 transacted works of art can be calculated. However, since the median price was only € 750, the number is actually higher. A price range of up to € 5,000 actually constitutes 86% of all bids. In other words, the million-level bids reported in the media are by no means characteristic.

In the commercial sector, a global average price of € 16,500 per work applies, whereby each dealer sold an average of 400 works in 2008. Here too, the average value is not necessarily striking. In 2009, 61% of sales were under prices of € 5,000. Of course, these figures always depend upon the highs and lows of the art market, as well as the world economy – but they are certainly valid as indicators of scale. In 2008, global sales of 42 billion euros comprised approximately 43 million transactions. This number illustrates the scope of the number works that were bought and sold in one year.

There is a diverse range of cultural economic reports that portray art as part of the cultural industry in Germany. The data currently available is difficult to decipher; uniform measurements and synchronised data surveys are lacking. Ultimately, the data is only rarely available in raw form – more frequently, it is presented as tables in studies.

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[1] Clare Mc Andrew. The International Art Market 2007-2009, Trends in the Art Trade during Global Recession. The European Fine Art Foundation, Maastricht. 2010.

ART FAIRS

At any rate, the art market is large enough to consider the precise effect that IT innovations could entail. This does not mean simply electronic commerce, even if electronic offers at auctions and comprehensive gallery websites are now standard. Eventhough, it simply remains impossible to reproduce to electronically present a photograph with its true colours. Even in catalogues, reproduction success is limited. Naturally, the effect of a 200 × 100 cm work cannot be reproduced on a 30" LCD.

Nevertheless, attempts have been made to bring IT innovations into the art market. vipartfair.com in early 2010 was a widely publicised attempt at conducting an art fair on the Web without a physical event. Real galleries rented online spaces, and visitors had to pay for tickets if they were not invited by the galleries. It was possible to chat online with gallery owners, to view further works in backrooms, and naturally also complete transactions. The website itself corresponded technically to the online catalogues many people are already familiar with from auctions: lists of artists and galleries, thumbnails of the works and specifications on the artist, work of art, year of origin, etc. A price range was stipulated for paying visitors. The site was supplemented with magazine-style information and virtual tours of the art fair.

vipartfair.com tried to illustrate the relationship structure of a real art fair in the Internet. What emerged was a kind of explorable auction catalogue with communication options for the online galleries. But except for the removal of fair opening time restrictions and physical presence, this 1:1 reproduction did not offer any added values to visitors, and therefore was not innovative. Nor was it successful: www.artmarketmonitor.com/2011/ 02/01/vip-art-fair-sales-round-up/ cites approximately 41,000 registered users. Compared with the 40,000 visitors to the Art Forum Berlin in 2010, these user figures could be classified as low – especially considering the fact that users could access the online platform globally from any location.

WEB 2.0

The World Wide Web has been the IT innovation of the past 25 years that has had the most lasting effect on everyday life. It has made a large scope of information easily accessible to anyone. It has also generated new industries – such as e-commerce with merchandise of all kinds – changing previous commerce structures immensely. New media forms, including MP3s and e-books, have only become practical through the Web. They have replaced older media, such as CDs, while threatening business models in the music industry. The Web has also brought about new forms of political discussion and activation. When a crisis emerges, dictatorships first ensure restrictions on the Internet, so that "internal affairs" are unimpaired to the largest possible extent and sustained by force.

Why has Web technology become the basis for such enormous innovations? In terms of information, a few conceptual principles have shaped the technologies of the Web. Through these principles, an immense size has been achieved so far without considerable impediments to growth. Decisive here has been the stipulation of open technical interfaces and communication protocols, which allow anyone to offer and access contents or write software to this end. The technical design of the Web is an outstanding feat of engineering.

At the heart of the system is a universal organisational principle that makes the Web so successful. In order to communicate something technically, it must first be named so that

communication software, such as a browser, can work with it. The Uniform Resource Identifier (URI) is the universal terminology of things on the Internet. The description of Web architecture supports this:

"In order to communicate internally, a community agrees (…) on a set of terms and their meanings. One goal of the Web, since its inception, has been to build a global community in which any party can share information with any other party. To achieve this goal, the Web makes use of a single global identification system: the URI. URIs are a cornerstone of Web architecture, providing identification that is common across the Web."[2] URIs are specific character strings which ensure clarity. A special form of URI is the wellknown Uniform Resource Locator (URL), which can be used to designate a web page. For a URI, it is not necessary to type names into a browser; there are also URI schemes for telephone numbers and books.

In other words, things must be nameable in order to ensure that information can be reliably exchanged within an interest group. A means of identification must be available, which on the Web is the URL – a clear and unambiguous name.

The statement "Global naming leads to global network effects" shows the value of agreement. The more interest group participants adhere to a clear formula, the more sensible it becomes for the individual, because more participants will understand him or her. The US publisher Tim O'Reilly considers data to be one of the core contents of Web 2.0: "Data is the next Intel Inside"[3]. Successful applications increasingly depend upon the quality and quantity of the data with which they work. Google Maps, which provides a wide range of detailed geo-information, is one example of such a data collection. However, Google itself is a platform for leasing advertising space that is based on a network effect. For the better the data is, the more attractive the insertion of advertising is in its representation. O'Reilly further asserts: "Users add value." Google Maps does not need to list which companies are located at a specific location – it allows users to enter this information. This becomes an interesting feature for companies, as their names can then be indicated on a map. For Google, this means that data is improved free of charge, thus increasing the value of the advertising space. To designate a location, one can now simply use a Google Maps URL instead of an address. Because this is so simple, more and more people are doing it. This incurs a further network effect.

ART LINKS

Which data is interesting on the art market? The object of the market transactions described above is the individual work of art. It is designated through the artist's name and title of work. But this is not always clear. For example, the painting "Untitled" by Richter certainly exists several times.

Perhaps one could designate a work as the painting that one saw at an art fair, or as lot 1023 at a specific auction. This identification does not refer explicitly to the work, but to a context in which it was temporarily located. If one wants to refer to a work in an e-mail, one could attach a photo of it – however, the picture is not a clear indication of a work, as many photos may have been taken and the reference cannot be processed. Based on principles of the Web, the following can be concluded: Each work of art should be possible to be electronically

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[2] Ian Jacobs, Norman Walsh. Architecture of the World Wide Web, Volume One. W3C Recommendation.
15 December 2004.
[3] O'Reilly, T. What Is Web 2.0: Design Patterns and Business Models for the Next Generation of Software.
In: Communications & Strategies 3(1), p. 17ff. 2007. Also: http://oreilly.com/web2/archive/what-is-web-20.html

referenced. Referenced it may well be – but what is behind the reference is a question of how the reference is interpreted. This does not necessarily have to be the photo of the work, but could also be another representation. Various representations are a further component of Web architecture:

"A representation is data that encodes information about the resource state. Representations do not necessarily describe the resource, or portray a likeness of the resource, or represent the resource in other senses of the word 'represent'."[4] The clear identification of the work can thus lead to different representations. This can be an individual photo, but also a collection of documents with texts about the work, a provenance list or price information from a gallery. Depending upon the interpretation of the reference, another representation may result. The interpretation is provided through a service – galleries supply price information, auction houses provide short descriptions and museums exhibition dates.

Further services could combine representations from various sources. A work list can be provided on an artist; a collection could supply a catalogue of works as a list of references. Since everyone uses the same reference, one could automatically determine in which collections an artist is represented. If the price and auction information are provided with the reference, the list of works can be supplemented accordingly. The 40 million annual transactions are increasingly becoming electronically visible – a work is not only listed on the market, but also as information on a gallery homepage or in an electronic auction catalogue. Service providers can collect this information for automatic integration.

Upon purchase of a work, a collector can set up and publish a portfolio by registering what he or she feels are the most important citations of the work, exhibitions or even personal considerations. Galleries can support the collector in this process, thus creating an individual connection to the buyer.

New forms of dealing with art can also be introduced. References can become the basis of virtual exhibitions in which collection contents are pooled and rearranged. Hans Ulrich Obrist imagines semi-finished or infinite exhibitions and devises random algorithms or mutations for the selection of exhibited works[5].

Those determining the identifier would have to be closely involved in the creation of the artwork, i.e. the artist, the gallery, a collection or a person involved in the technical production of the work. Ideally, the reference would be developed as the work is created and then embedded. This is technically feasible without compromising the work process – a computer chip on the back of a canvas or in the picture frame could contain the reference. The edition sticker of a photograph could also contain it, as well as the base of a sculpture. Normal mobile phones can read these computer chips in contactless fashion to identify the reference.

Museums have long worked on projects promoting the better exchange of collections. Classification systems and work catalogues already exist which technically can be easily embedded in URIs. As a side effect, this would open the way to a better marketing of museum information about works through electronic services. For instance, visitors could save a reference to an exhibited work on their mobile phone and then purchase it as an individualised image on a t-shirt in the museum shop.

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[4] Ian Jacobs, Norman Walsh. Architecture of the World Wide Web, Volume One. W3C Recommendation. 15 December 2004.
[5] Hans Ulrich Obrist. The Mother of All Lists – An Incomplete A-Z of the Internet. In: Laura K. Jones (ed.). A Hedonist's Guide to Art. Filmer, London. 2010.

If double references are allocated, it must first be determined which designation obtains the higher value through the network effect. The city of Berlin can be referenced by www.berlin.de or by http://en.wikipedia.org/wiki/Berlin. Probably the latter reference takes on a higher value, as a "neutral" description of the city in English appeals to more people. If double designations are known, they can be marked down as computable reference synonyms.

ART FAIR 2.0

A trade fair can also profit from clear references. These lead to new information pathways, new communication forms at fairs, more time spent with an artwork, and more extensive downstream transactions.

Each work could be identified with a reference in every presentation booth and on each price list. And not necessarily as a computer chip – it can also be published as a twodimensional barcode, which can be directly scanned by conventional smart phones and decoded through services. The art fair catalogue would no longer be a printed work, but rather an electronic service activated by the various references.

Since the URL can be saved and the reference can also be decoded later, the fair would be extended virtually for the visitor. After visiting an art fair, one frequently takes home a dog-eared paper catalogue. Electronically speaking, one would instead have access to a kind of bookmark collection on viewed works, which can then be combined with flags from other fairs or exhibitions. Galleries would also have interest in such post-activity with works on display, as it could very well lead to a later transaction.

But the art fair itself could also offer new forms of interaction. Visitors could select the most popular artworks, pieces or artists which they consider to be the most important, and transmit electronic ballots for them. The electronic art fair catalogue could be writable for visitors' comments. Visitors with the same favourites could arrange to meet up for discussions. A wide range of opportunities would develop, which would also represent new and real innovations. Innovation with IT does not merely mean the reproduction of an existing constellation in another context, as attempted by vipartfair.com. Rather, it means transforming the overall constellation through new electronic mechanisms. In the art market, standardised references on individual works would be one means of offering innovative services.

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