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Four approaches to implementing digital media in art education

Anders Marner* & Hans Örtegren*

Abstract
This article is included in a research project called Skolämnesparadigm och undervisningspraktik i skärmkulturen – bild, musik och svenska ["School subject paradigm and teaching practice in the screen culture – art, music and Swedish"]. Due to digital changes in the media world of pictures and art, digital media are implemented in the Swedish school subject "bild", art in English-speaking countries, in secondary school. The school subject bild is seen as conforming to a school subject paradigm. It is supposed to meet another paradigm, ICT and digital media, with its values and expectancies. What happens if a traditional art subject paradigm, with the idea of the relevance of manual expression of self and of traditional techniques, meets digital media? Four different approaches to the implementation of digital media in the subject of art are discussed: resistance, add-on, embeddedness and digital media as dominant. The main focus is what is happening to the core of the subject, called the sacred, and what really is the core and sacred of the subject. Also discussed is what we call the profane of the subject, which may be expelled, and the relationship between the sacred and profane. Is digitalisation the future of the art subject or is it a way of leaving the art subject the way we are used to thinking of it? We are using empirical studies in nine schools in Sweden, including observations and interviews with pupils, art teachers and school administrators, that are accounted for in other articles.

Keywords: school subject paradigm, the sacred, the profane, bild, screen culture

1. Introduction
The present article concerns the relationship between the Swedish school subject bild, traditionally called art in English-speaking countries, in secondary school and digital media. The bild subject is called art in the rest of this article. It is a position paper including the conclusions of other empirical studies from a research project called Skolämnesparadigm och undervisningspraktik i skärmkulturen – bild, musik och svenska ["School subject paradigm and teaching practice in the screen culture – art, music and Swedish"]. In this project, school subject paradigm refers to the way school subjects are considered, the meta-perspective on teaching practice. The self-understanding includes both implicit, expressed in professional jargon, and explicit aspects, such as in syllabi. A school subject paradigm can be conceived of as having ‘sacred’ and ‘profane’ characteristics. Stakeholders and subject representatives can divide a school subject paradigm into the sacred of the subject, that which cannot be expelled, and the profane, that which may be

*Dept. of Creative Studies, Umeå University, Umeå, Sweden Email: anders.marner@estet.umu.se; hans.ortegren@estet.umu.se
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expendable or later incorporated in the sacred. Various school subjects and their subject paradigm and teaching practices may relate differently to digital media. The school subject values of art are seen as conforming to a school subject paradigm which is supposed to meet another paradigm, ICT and digital media, with its values and expectancies. In this article, we attempt to use the notions of paradigm, the sacred and the profane in relation to the art subject and its implementation of digital media. We also try to identify the different school subject paradigm of both the teachers and the pupils and how they relate to digital media. Tensions may arise in this meeting and they are discussed in the article. We also argue that there may be four different kinds of meetings between digital media and art: as resistance, as add-on, as embeddedness and as digital media as dominant.

1.1 Changes in pictorial media

We often think of a painting as a traditional way of creating a work of art. A painting is seen as a work of art and is shown at certain expected places, for example museums and art galleries. When it is reproduced, to a great extent it loses its artistic value (Marner 2005), which is connected to its unique presence. Even though reproductions of art are not unusual on the Internet, the unique presence suggests that it is best shown in only one place, which means that a digital reproduction of it is not the work of art, only a reproduction of a work of art. Pictures of entertainment, often of popular culture genres or documentary everyday pictures, are now more common on the Internet. These pictures are not involved in the above mentioned demand of authenticity. Digital pictures are often shown on a screen, via the Internet, a hard disk drive and different programs. The computer screen may be seen as a historical development of the framed painting, along with the screens of the movie theatre, the TV set and the radar (Manovich 2001). The way pictures are created has developed over time, from handmade, chirographic, to made with the help of machines, mecanographic (Sonesson 1992), and now to digital. The functions of pictures are manifold and are mixed with each other, art and entertainment are mixed in, for example, with the fantasy genre. Informative graphics and entertainment are mixed to create infotainment or edutainment etc. The changes in the construction, function and also circulation of pictures, in social media with its interactive multimodal dialogue, creates a new situation in art, in media and thus in the school’s subject of art.

1.2 The paradigm of and changes in art education

The vast majority of Swedish primary and lower secondary education is a nine-year compulsory form of schooling. In 2011 a new curriculum, Lgr 11, with new syllabi and new final marks were introduced (Skolverket 2011). Art is a compulsory subject in Swedish primary and lower secondary schools.

Bild is Swedish for “picture”. Formerly in Sweden it used to be called drawing. In the curriculum for primary and secondary education from 1962 (Lgr 62), the old
The subject paradigm of modern Swedish art education, the communicative paradigm, was formulated in policy documents in the late 1960s, in Lgr 69, where pictorial communication is stressed instead of just art. It has been prevalent since then in curricula, professional journals and professional jargon among art teachers. In the curriculum of 1980 (Lgr 80), pictures were seen as a language and “An important means of communication beside speaking, reading and writing” (Skolöverstyrelsen 1980, 69) and the name of the subject was changed from teckning (Swedish for drawing) to bild. The subject has thus developed from being associated with psychology to being associated with sociology, from being associated with art to becoming a broader subject connected to modern media including design and art. A pre-digital paradigm shift thus seems to have taken place. An attempt has thereby been made to abolish the dichotomy that had existed since the 1750s between the fine arts, which have pleasure as their goal, and the useful and mechanical arts (Kristeller 1951/1952).

On the basis of the above reasoning, one might think that the subject paradigm is well prepared for digital media. As regards the relationship of art education to digital media, Nationella utvärderingen i bild 2003 (“The national evaluation of art education”), NU-03 (Marner, Örtegren & Segerholm 2005), is a source. However, it shows that the traditional teaching of painting and drawing still has a strong grip on the way of thinking about and of teaching the subject. According to NU-03, it is manual picture production that dominates art education. NU-03 shows that the scope for working with digital media was limited. Almost 80 percent of pupils “never” or “seldom” used digital equipment in the creation of art work (Marner, Örtegren & Segerholm 2005, 76). The use of computers was thus not yet an integrated feature of art education in 2003.

As mentioned earlier, in the curriculum of Lgr 62 the subject was, along with “free creation”, regarded as an aesthetic-practical subject. Although the aesthetic-practical paradigm has not been used in curricula or in syllabi formulations since Lgr 69, it is still used by about 45 percent of the art teachers, according to NU-03 (Marner, Örtegren & Segerholm 2005), which may be seen as a lagging effect. However, about 40 percent of the art teachers regard the subject as a communicative subject, which is more in line with the formulations in the curricula of Lgr 69, Lgr 80, Lpo 94, and Kpl 2000.

The fact that nearly half of the teachers choose to characterise the subject as an aesthetic-practical subject, namely, in line with a way of dividing school subjects into
traditionally different categories that is no longer current in school policy documents, confirms what previous research has concluded – that an older subject paradigm has not been unambiguously replaced by more contemporary ones. Several school subject paradigms operate parallel to each other. At the same time as a new syllabus intends to modify the subject, it is instead broadened, leading to an overload of content, selection problems (Petterson and Åsén 1989, Åsén 1992, 1999, 2006) and tensions between subject representatives with different paradigms.

Art education is largely connected to the tools and materials used in the subject, such as pencils, paintbrushes, paper and paint. The tools and materials are accompanied by a powerful tradition and history, linked to a traditional concept of art where the genius of the artist is in focus and to places where art is made and shown, for example studios, museums and galleries. Taken together, it is an aesthetic-practical subject paradigm with a rhetoric focusing on an idealistic concept of free creativity.

In addition, in Swedish art education there is a communicative part that has been included since the late 1960s, but it has perhaps never been given as large a scope as pure handicraft training. Two subject paradigms are thus competing for the preferential right of interpretation. Although the subject in the syllabi broadened its concept at an early stage from art to a wider view of pictures, there seem to be problems with implementing digital media in the teaching practice of the subject.

2. Research survey

School subject paradigms are important with regard to the use of ICT (Goodson and Mangan (1995) Sutherland, Armstrong, Barnes, Brawn, Breeze, Gall et al. (2004). Digital media’s entry into education can be conceived as being filled with tension (Hennessy, Ruthven and Brindley 2005). One reason for this may be that digital media have chiefly developed outside of education, connected to popular culture and in groups of young people. A certain way of making a picture may lead to a certain function and distribution of that picture (Sonesson 1992). Wertsch (1998) emphasises that the tools and mediations involved were initially intended for a particular use, for example religious or military, but their area of use has been widened later on. However, the tool or mediation may bring with it some aspects of its primary use and origin. This may imply that pupils in a bottom-up movement are introducing digital media, and along with them popular culture, to the subjects (Sutherland et al. 2004, 415), which might constitute a threat to the sacred core of a subject.

Another reason may be that national efforts directed at ICT in education may be conceived by the teachers as top-down governance (Sutherland et al. 2004, 415). The Swedish Nationalencyklopedin (NE) defines IT (and ICT) chiefly as a device that mediates communication and various contents digitally. In Sweden, the metaphor
informationsmotorvägar ("information superhighways") is used when discussing IT. IT is thus technologically and instrumentally defined.

Other metaphors are found in the literature discussing the degree to which digital media are integrated into school subjects. ICT in education has met with "resistance" (Finlayson and Perry 1995, Erixon 2010) and been seen as a "Trojan Horse" (Sutherland et al. 2004, Olson 2000) as well as a "colonisation" (Goodson and Mangan 1995) that requires time that does not exist in a subject and contributes to the overload of material. Yet ICT can improve efficiency (McCormick and Scrimshaw 2001, 45) or be "added" to other features of a subject as an "extension" (McCormick and Scrimshaw 2001:45). The relationship between new technology and the subject may also take the form of a negotiation that can increase or decrease the repertoire of digital media, where the invaded educational culture has to redefine its boundaries with negotiations (Demetriadis, Barbas, Molohides, Palaigeorgiou, Psillos, Vlahavas et al. 2003). Moreover, digital media can be "embedded" in a deeper way in different parts and contents of the subject, which may also imply that the fundamental nature of the subject will change (Sutherland et al. 2004). This negotiation among youth culture, national efforts, educational culture and the school subject paradigm is of relevance to study when the school subject and digital media meet. What is the school subject willing to let in and what can be left out? Why and how are new digital media being let in?

In art education researchers have reported the repudiation of digital media by art teachers. On one hand, they have regarded art and technology as incompatible areas. Digital media are sometimes seen as merely an entertaining game, something that chiefly facilitates reproduction and hence decreases pupils' creativity. They have been linked to the world of business as an opposite of the world of art. A lack of resources has also been mentioned as a factor contributing to the limited use of digital media (Phelps and Maddison 2008). On the other hand, certain subjects like art, languages and music may however be seen as media-specific and be defined by the medium they use as their home medium (Marner 2006). According to McCormick & Scrimshaw (2001, 47), new technology can here completely transform the nature of the subject. Phelps and Maddison (2008) also report that teachers of visual arts in Australia, just like other teachers, adopt and integrate ICT in various ways.

Wood (2004) studied the subject of art & design in British schools. In the article, several informants are referred to as mainly using ICT in the subject in a context oriented towards modernism. Examples given include picture treatment programs that can deform photographs or produce cubist art, that then form the basis of a pupil’s acrylic painting. It is claimed that one can solarise or produce picturesque effects by means of various programs. By putting different types of objects on a scanner, one can produce unexpected effects in pictures. The aim often seems to be to use ICT to create intuitive and self-expressive works. Wood contrasts this with
traditional drawing and its striving for virtuosity with the computer’s potential to enable spontaneity, the desire to experiment and intuition.

We have arranged some of the above mentioned research results in a model where the implementation of digital media occurs according to four different approaches: as resistance, as add-on, as embeddedness and as digital media as dominant.

3. Theories

A media-ecological perspective is used as a departure from and background to these listed categories. This includes the idea that we are situated within different mediations that are used for communicative purposes. Media are not neutral, transparent and value-free “information superhighways” since they are also part of the content (Meyrowitz 1985/1986, Manovich 2001). This holds certain consequences for education and teaching with digital media in the subject of art.

This article is included in a research project called Skolämnesparadigm och undervisningspraktik i skärmkulturen – bild, musik och svenska (“School subject paradigm and teaching practice in the screen culture – art, music and Swedish”). A “paradigm”, a concept taken from the structuralist and semilotogist Ferdinand de Saussure and later on the philosopher of science Thomas Kuhn, can most easily be described as a prototype or model, unless one wants to enter into a more refined theoretical discussion (Kuhn 1970, Kjørup 1999). Sawyer & Van de Ven (2006, 11) use the notion of paradigm in mother tongue education as follows: “a system of values, prescriptions, theories, competing coalitions”. Within the research project we use the concept of paradigm as the reflections connected to a subject made by its stakeholders and users through self-understanding about and meta-perspectives upon the subject. In some sense, the self-understanding may be implicit but it is also expressed in syllabi, curricula and in the subject representatives’ professional jargon and teaching practice. In normal circumstances, the school subject paradigm extends over time. It has a memory and creates participation, which may imply that a certain lagging effect manifests itself. It is thus not only a matter of context dependence and situation. Further, a school subject paradigm may not always be identical to actual teaching practices.

According to John (2005), via Bernstein (1996), in school subjects there is something that the representatives of the subject cannot conceive of excluding from teaching practice, the centre of the subject; the sacred of the subject. In the project we consider this as that which is taken for granted and given in the subject, but also what is highlighted and of special interest. In addition, there is that which the representatives may consider the profane, which may be experienced as being forced on the subject from the outside, or that which is primarily regarded as expendable if the overload of material is too great. This belongs to the periphery of the subject, which is considered of less value, of less interest.
However, historically there is an exchange of what is inside the subject and outside the subject according to different subject paradigms. It thus seems that subject paradigms are sensitive and permeable to social changes.

The concept of paradigm may be used in connection with the subject of art and its relationship to digital media. Based on a stable state, where some contents, methods and aims are highly ranked in the subject, a number of new features are being added (McCormick and Scrimshaw 2001, 45), including digital media, possibly resulting in an overload of material and conflicts, which Kuhn calls anomalies (cf. Pettersson and Åsén, 1989), Åsén, 1992, 1999, 2006). Features of the subject that for various reasons are not considered to fit in will be neglected or placed on the periphery (Kjørup 1999) and become profane. The subject is exposed to pressure, which may lead to more or less extensive changes, in some cases paradigmatic changes, which might result in the return of a more stable state.

Depending on which subject paradigm a school or teacher follows, the way of using digital media may vary in art education.

4. Method
This article is a follow-up to two case studies, Anders Marner’s Digital media embedded in Swedish art education – a case study (2013), Hans Örtegren’s The scope of digital image media in art education (2012) and the article När digtala medier adderas till bildämnet (Örtegren, 2013). It represents a theoretical development in discussing digital implementation in the school subject of art as four different approaches to implementing digital media, resistance, add-on, embeddedness and digital media as dominant. The paradigm of the school subject is seen in relation to a paradigm of ICT and digital media. The article may therefore be seen as a position paper which takes account of the conclusions of empirical studies from nine Swedish schools and their art education. Observations in all of these schools have been made not only of art classes but also of computer rooms and public premises. The schools we have studied in relation to the subject of art were given the following names: Willow, Hazel, Sallow, Limetree, Hawthorn, Alder, Larchtree, Ash and Pine. Interviews were conducted in focus groups with pupils in 20 classes in 8th to 9th grade and with their ten art teachers, including school administrators. The pupils were separated into girl and boy groups with 3 to 6 pupils each and every interview took around 30 minutes. Around 150 pupils were interviewed. The interviews were carried out in 2011–2012. Teachers, ICT administrators and school administrators were interviewed for around 60 minutes each. All of the interviews were conducted in the art room or an adjacent space. They were recorded and transcribed.

The informants were asked to describe the presence of digital media and express opinions about digital media in school, more specifically art but also in other subjects; in school as well as out of school, e.g. on the Internet and in exhibitions.
The pupils were also asked about their leisure activities involving digital media and their interest in communicating with pictures and art.

After compiling the collected empirical material, three main categories about the functions of digital media were extracted, resistance, add-on and embeddedness. A possible fourth category, digital media as dominant, was later added to them. In the analysis the notions of paradigm, the sacred and the profane are used to understand the position of digital media in the school subject.

5. The four approaches

5.1 Integration

Integration presupposes an integrating party, in our case the school subject, and in a wider sense the school culture. Over and above this there is what is integrated, in this instance digital media (and the genres and contents associated with such media). There are thus two parties in the meeting, which may also sometimes involve a conflict. Digital media are active forces whereby values, power and knowledge are implied (Meyrowitz 1986/1987). This also applies to the school subject which has a culture and a tradition of its own, the paradigm and the relationship between the sacred and the profane (John 2005) that allows or prevents the importing of new elements.

5.2 The first approach: Resistance to digitalisation of the subject of art

One extreme is that digital media are irrelevant to the subject and that only the traditional tools for drawing and painting etc. are stressed. On the part of the school or the subject representative there may then exist “resistance” (Finlayson and Perry 1995, Erixon 2010) to digitalisation of the subject.

The economic and material resources available in a school are the conditions of education. In our study we have found that in three of the nine schools (Willow, Hazel and Sallow) our informants are experiencing resistance to digitalisation. This experience is attributed to a shortage of hardware and software. The lack of these resources is, at least according to one art teacher, related to class sizes (25–30 pupils) and the educational climate in the art room. It is impossible, she says, to use digital media with these class sizes. The teacher is herself skilled in using digital media and are also applying a communicative subject paradigm in art, yet she has not managed to implement these skills in the education. This suggests that the limited resources available in schools have exerted substantially more power than the subject paradigm of the art teacher, even though this subject paradigm is compatible with the current syllabus. In another case, the teacher felt pressured by the syllabus and the school to digitalise the subject to a greater extent, yet the teacher
did not receive enough funding to even repair a printer. This implies that in some cases economic considerations are more important than pedagogical ones.

Some teachers are themselves part of the resistance. They express resistance and doubts concerning the possibilities of digitalising art education. In these cases, their subject paradigm does matter, they see the subject in relation to “free creativity” or “creativity” in a dichotomic relation to digital media. Digital media are seen as a threat to the traditions of the subject, its freedom and its creativity – the sacred – according to John (2005). The teachers make excuses in some instances and throw the blame on somebody else or the insufficient resources. The mediations and the technology that are then chosen are traditional, i.e. those already integrated into the subject. Drawing and painting are seen as the sacred. Digital media are becoming marginalised, of less value and of less interest and thus seen as the profane. Some teachers are willing to wholly neglect digital media in art education.

It has to be noted that some of the pupils are also to some extent negative regarding digital media, considering them as a way to “cheat”. They sometimes want to be graded in traditional aesthetic-practical skills. From their point of view, it is too easy to make a digital work with graphic processing. However, many pupils are interested in digital media as a leisure activity. When asked about their work on art in their leisure time, they immediately deny doing it. When asked again about their leisure activities related to digital media, they inform us about learning about Photoshop, working with still and moving pictures, and about publishing in social media. These activities are thus not connected to the subject of art in school, which for them is only about drawing and painting, while leisure art is often about digital media. This means that the resistance to digitalisation may cause pedagogical problems in traditional art education, reducing the pupils’ incentive in the subject. A dichotomy is constructed; art is not digital media, digital media are not art.

The “alien” elements are met with resistance, regarded as anomalies (Kuhn) on the basis of an aesthetic-practical subject paradigm and neglected in the teaching. This approach, that digital media are irrelevant to teaching and that only the traditional tools for drawing and painting are stressed, is however not relevant in view of the formulations about modern media’s role in teaching in the syllabus.

### 5.3 The second approach: The addition of digital art

Yet another attitude is that digital media can be incorporated in the subject as a further tool in otherwise handicraft-based teaching. Digital media are then integrated into the education in a more cautious way, “added” (McCormick and Scrimshaw 2001, 45) as a special activity, for example, when art education for a certain period is conducted in a computer room, or when only part of the teaching is digitalised, for example working with specific digital assignments that are presented to the pupils.
Our studies reveal that four schools (Limetree, Hawthorn, Alder and Larchtree) of the nine chosen schools have restricted permeability in relation to digital media. Restricted permeability means that digital media are only used as an exception, merely in some situations, rather than being used in everyday school work. They may be used by some pupils when gathering information on the Internet or by the teacher making a digital presentation, but not regularly. They may be used when making movies due to a special tradition in a certain school, but not in other situations.

In these add-on schools, digital media may also be used in a non-compulsory media or art subject, which may be more flexible in relation to what is sacred or profane. In these cases, often the aim for the pupils is to develop their skills in mastering different programs. If the digital art activities are placed outside the compulsory subject of art, for example in the optional school subjects The pupil’s choice or Media (Erixon et al. 2012), no real conflict or tension will have to arise. The problem is then solved by another, more flexible and local subject that takes on digital media education, while the subject of art continues to chiefly comprise aesthetic-practical manually based art education. Extra teachers may be hired as experts for a limited period and for project work etc. The effect that digital media have on the education can, however, be limited by such an arrangement. That other non-compulsory subjects take the responsibility for digital media education is certainly a flexible but an insecure solution since that type of subject often lacks the sustainability and perseverance that the syllabus and time plan as well as educated teachers can provide. Further, not all pupils are included in these optional subjects. Hans Örtegren’s article “The scope of digital image media in art education” (2012) discusses a situation like this. The sacred in the subject of art in all these add-on cases is the bias towards traditional techniques and creativity, although with a touch of digital media in the profane periphery.

In cases of resistance, the teachers make excuses and assign the blame to somebody else or the insufficient resources for being unable to work with digital media. However, in cases of the addition of digital media the arguments become more subtle. The teacher connects values to manual work, like the value of “the friction” between the chalk and the underlay or discuss the “horrifying” speed and quantity of digital media that prevent creative reflection. In these situations, the teacher is in a negotiation with him/herself about how to use digital media in a qualitative art education.

A variant of the add-on approach may be that digital elements occur in art education within a dominant modernist subject discourse where digital elements are aids in the manual process of creation, as Wood’s (2004) informants often describe it. Arguing in this way implies that the computer is ascribed qualities previously ascribed to painting inspired by modernism. Older modernist thinking about art has thus been brought into a new context, which leads to the potential communicative character of digital art not being fully taken into account. Presentation and analysis,
visual culture and youth cultures are not taken into consideration. The problem still concerns counteracting the virtuosity of drawing figuratively in order to promote modernist abstraction and deformation.

If new elements are added to the subject they may lead to an overload of material and techniques (cf. Pettersson and Åsen, 1989 and Åsen, 1992, 1999, 2006) and tensions and conflicts may arise about what is considered sacred and profane. This is shown in the cautiousness, ambivalence and scepticism that several of the ‘adding teachers’ are expressing in different arguments concerning content and working methods. The conflict may be within the teacher him/herself. Based on an aesthetic-practical subject paradigm, the various conceived alien elements may be seen as anomalies (Kuhn) and as peripheral in relation to the sacred, as a “Trojan horse” (Sutherland et al. 2004, Olson 2000), “colonisation” (Goodson and Mangan 1995), or as the profane (John 2005). If, on the other hand, a non-compulsory subject is taking care of digital media education tensions between different paradigms may not arise and the aesthetic-practical subject paradigm in art will prevail.

This approach is insufficient if we assume that the subject should integrate digital media in such a way that their full capacity is utilised, including creativity, communication, performance, apprehension and analysis.

5.4 The third approach: The embedding of digital art

When new elements are introduced into the school subject, the subject as a whole will also be affected by the anomalies, the “alien” elements. Gradually, the alien elements become less alien and successively fully embedded in the subject, on the terms of the subject. This may be called embedding. Several of the following aspects may be integrated in a new subject paradigm: syllabus, curriculum, working method, the teacher’s education, finances, digital resources and other frame factors.

Two of the nine schools we are studying are embedding digital media in their art education (the Ash and Pine schools). When digital media are embedded, they are integrated into different phases of the subject: in pictorial and art studies, in preparatory phases such as searching on the Internet before creating, during graphic processing of seamless montages, or when pictures are found on the Internet for the later manual production of collages or assemblages; in external and internal communication; in tutoring between the teacher and pupil by SMS/MMS or Internet; when producing masters for printing, in digital photography and moving pictures; for teachers’ and pupils’ presentations on an interactive whiteboard; and for the assessment (in digital portfolios) and storage of pupils’ works and other achievements.

Digital media are then more deeply embedded than if they are only added to an otherwise craft-based education as a new and exclusive feature. Digital media have become an everyday and natural part of daily work in the art rooms. Creativity and communication, presentation and analysis have become parts of the subject’s
striving towards complete communicative processes. The computers are used all the
time. A teacher says “a computer should be used like chalk, a pencil, something that
is used every day, not just two hours during a school year”. A computer room is an
unnatural place for computers, he says.

In one of the schools that we consider is using an embedded practice, trolleys
(called nomads) containing 15–20 laptop computers are used in the art room. They
have to be booked by the teacher. In another school, eight stationary computers are
used in the art department. Thus, in none of the schools with an embedding practice
we have studied do the pupils have one computer each. This suggests that digi-
talisation is not only a question of equipment, but also of Didaktik (German) and
subject paradigm.

If the art rooms are places for the production of digital works, then other spaces
are venues for digital presentations; TV monitors in cafeterias and public premises
in school, the school’s homepage, social media such as YouTube, Picasa and Deviant
Art. A way to expand the production of works is to use free open-source programs for
art and graphic processing. A program can be downloaded on to any computer and
working at home is becoming an option. You do not have to carry paint and brushes
home, and you are not limited to using the expensive programs in the computer
room or art room. This means that effectiveness is increasing, creativity is not simply
restricted to art lessons and pupils are working at home and in other places to an
ever greater extent. The motivation for working has increased, the subject is more
appreciated when seen as part of a larger media world that the pupils form part of.
Underachieving pupils are also acquiring enhanced motivation. Colleagues appreci-
ate the subject more when they notice that the pupils are familiar with graphic and
presentation programs that they can then also use in other subjects. The subject is
placed in the centre of the communicative school.

A summary of the arguments for using digital media from both teachers and
pupils in schools embedding digital media is the following: the efficiency, simplicity
and speed of the different processes are being augmented. Aesthetic arguments
about preferences, finishes and skills are also conveyed, and enhanced motivation is
mentioned. However, a few pupils said that manual skills may be lost when work
with digital media is too one-sided. It is interesting that digital media are seen as
time-saving in the embedded schools while, conversely, they are regarded as time-
consuming in those schools where there is resistance to digital media.

We noticed in both schools that use embedding practices that the computers
are used almost all of the time in the art room while working, yet a combination of
digital and manual work is the most common way of working in these schools. An
interesting aspect of these two schools is that the development of digitalisation has
taken two opposite paths. In one school, it is the art teacher who initiates the process
in a school context that is not interested in digitalisation – a bottom-up process.
In the other school, the art teacher is following the decisions of the school administration as part of a top-down process.

According to Kuhn, the anomalies within the paradigm eventually became too large and it may therefore have been necessary in these schools to create a new paradigm, avoiding too much adding of techniques and materials. We interpret these changes as changes in relations between the sacred and the profane. It is no longer an aesthetic-practical and a free creativity paradigm that holds the sacred position. Instead, it is communicativity, which may be seen as including creativity, communication, performance, apprehension and analysis. Earlier aspects of the profane have become sacred.

The question is answered here of what the subject can do with digital media rather than the question of what they do with the subject. Further embedding of digital media in the subject may take place when all pupils are equipped with a school computer of their own and it is used in the art education in different ways. Anders Marner’s article “Digital media embedded in Swedish art education – a case study” (in press) is a study of how digital media are embedded in a Swedish secondary school.

5. 5 The fourth approach: Digital media as dominant

This approach, which represents an extreme position, implies solely describing ICT as the most important tool of art education. In such a case, ICT has taken over as a one-sided instrumental tool, and important aspects of the art education are neglected. We have not found obvious examples of digital media as dominant in any of the nine studied schools in the school subject of art. However, there are tendencies to such a focus in optional courses and subjects in two of our studied schools, where the goal of the course is to learn digital programs. In such contexts this fourth approach is at work. A subject representative of an optional media subject, not an art teacher, is discussing closing the course when the pupils are mastering the digital tools. The teacher says:

Media as a subject, with the development we have, and with the present competence of the pupils, the question is how long we are going to have it. Soon the pupils are so competent that we don’t need it as a subject of its own. I think that they soon are so keen that all of this will naturally be used everywhere.

An art teacher would instead have said: “When the programs have been mastered, that is when the fun begins”. The approach may to some extent explain art teachers’ resistance to digitalisation of the subject. For art teachers the sacred is still creativity, not only the mastering of digital tools.

IT and ICT are abbreviations whereby, according to Nationalencyklopedin (NE), IT is an umbrella concept for computer technology and telecommunication, which
have been described as some of the most important driving forces for industrial and societal changes. ICT is a technology that enables communication and is seen more as a material basis for a possible subsequent mediation, arbitrary in the context, which may be called the ICT paradigm. The content of what is mediated is described as relatively uninteresting in such a context. “Electronic highways” are mentioned here and what is mediated is referred to as “content” (Morville & Rosenfeld 1998), as something entirely different that can be subsequently added when necessary. ICT is in these cases seen as a neutral transporter of information. A technological way of looking at digital media, as a material basis, may therefore be described as too one-sidedly instrumental and may result in an indifferent relation to representative and communicative problems, which also include critical examination. The sacred in this case is digital technology, not communication. Communication is seen as the profane. For this reason, this approach does not seem to be relevant to art education since communication and creativity in most cases and in various ways, above all according to the syllabus, are the sacred of the subject.

6. Discussion

The implementation of digital pictures in the school subject of art in Sweden is slow (Marner, Örtegren and Segerholm 2005). Digitalisation of the subject has, however, been started and will probably continue, among other things because it is developing in chains whereby one digital tool also requires another. The analytic use of the dynamic notions of paradigm, the sacred and the profane shows that there are slow changes in the subject, but at the same time also a flux. The subject is exposed to pressure which has led, and will lead, to powerful changes and paradigmatic changes, which may result in a more stable state recurring. In our investigation we can observe resistance. However, we also notice that changes in the subject of art are actually occurring while we are doing our research. We hear of new digital developments and applications from our informants each time we are in contact with them.

The pre-digital paradigm shift that took place in the late 1960s in Swedish art education, with its broad concept of pictures, and not only a concept of art, suggested that the paradigm was well prepared for digital media. Our research shows that this is not the case. Resistance and adding on are more common than the embedding of digital media. This confirms what Petterson and Åsén and Åsén already noticed, namely that new curricula and syllabi in art are broadening the subject instead of creating a new direction for the subject. It also suggests that curricula and syllabi may be ideal rather than tools for actual changes in teaching practice. Still, the aesthetic-practical and free-creativity paradigm are common in schools, among both teachers and pupils. In the concept of resistance, these older paradigms are connected to contemporary art education, excluding digital media. In the add-on concept, a mixture of different paradigms is encountered where anomalies also
occur. In the embedded examples, a digital paradigm shift has taken place, which includes a more stable state. In the digital media as dominant approach, the sacred of the subject of art has been lost, which also explains why some art teachers are afraid of digitalisation and why this category only concerns subjects other than art. In the subject, it is expected that the medium and its content are conflated.

6.1 Embedded in what?

Today digital media are constantly being hyped up; we talk about ‘a digital life’ and ‘a digital world’ as if digitalisation is taking control of every aspect of human existence. However, when talking about the embedding of digital media, one imagines that they are embedded in something. This something consists of humans, pupils and teachers, who are situated in art rooms where teaching and learning is at hand. They create and look at digital pictures, but they are not digital themselves, but working in time and space, in their life worlds. The printed pictures may not be digital either. Digital media cannot exist without creators and onlookers outside of digital media. In addition, the hardware of digital media is material and non-digital. The embedding of digital media thus implies that they are embedded in what is non-digital. This means that digitalisation in any situation cannot be total. When we discuss the relationship between digital media and the lifeworld we also have to consider the possibility of appropriation (Wertsch 1998), that we can use media on our own terms instead of only mastering the mediation, using it on the terms of the medium. If, like Friesen (2011), we look at the relationship in the following structuralist way: “Just as we are spoken by language, rather than being its speakers, media express themselves through us rather than serving as neutral tools ready to do our own expressing bidding” (Friesen 2011, 176), no life world would exist and there would be no place outside of digital media. Further there would be no art and literature.

Anders Marner is Professor at the Department of Creative Studies, Umeå University, Sweden. He has an Art teacher exam from University College of Arts, Craft and Design in Stockholm and has worked as an Art teacher for several years. He became Ph.D. in Art History 2000, and has been teaching and researching with a focus on socio-cultural theory, semiotics and the school subject Art, within the research subject Pedagogical Work.

Hans Ortegren is a Senior Lecturer at the Department of Creative Studies, Umeå University, Sweden. He has done research in the areas of didactics, art pedagogy, and curriculum studies. He has also done research in art history and is currently carrying out in depth-studies about the Swedish school subject or art.
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