GENT 2009 41st CONFERENCE

# Abstracts

University College Arteveldehogeschool Belgium

## Preface

The organising committee of the 41st International Circle (IC) of Educational Institutes for Graphic Arts Technology and Management Conference, hosted by the Graphical and digital media department of the University College Arteveldehogeschool in Ghent-Belgium (www.arteveldehs.be) is proud to publish the summary of the contributions to the IC's annual meeting (13-18 October 2009) in this Booklet of Abstracts.

Writing abstracts for conferences is an important channel to inform conference participants and the colleagues in the institutions back home. The main purpose of conference abstracts is to inform colleagues on work that is either completed or currently developing, so that they can judge its intrinsic interest and likely quality against their own ongoing projects and activities.

The presentations scheduled on 14-15 October 2009 offer a wide platform for the exchange of ideas about scientific issues within the field of graphical and digital media as well as about the structure and content of the education. It attempts to shed light on all these very diverse aspects and fosters all forms of cooperation between the IC members in the field of education and research.

The IC lectures take place in the very fitting location of the main auditorium of Arteveldehogeschool's administration building (Hoogpoort 15, 9000 Ghent), located in the very heart of Ghent.

We are confident that this conference will stimulate the exchange of knowledge and the cooperation between the participating institutes active in both education and industry.

Website IC2009: http://ic2009.arteveldehs.be

The IC2009 conference committee wishes you a very informative and productive conference.

Wolfgang Faigle, IC president (faigle@hdm-stuttgart.de)

Luk Bouters, Dean Graphical and digital media department
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## Schedule

**Tuesday, October 13th - Arrival**
20:00 Welcoming Dinner

**Wednesday, October 14th - 1st day of International Circle Conference**
08:30-09:30 Registration
09:30-10:05 Official opening
10:05-10:45 Presentations
10:50-11:10 Coffee break
11:15-12:55 Presentations
13:00-14:15 Lunch break
14:20-15:20 Presentations
15:25-15:45 Coffee break
15:50-17:10 Presentations
18:00-19:30 Official Opening Reception in the Town Hall Ghent

**Thursday, October 15th - 2nd day of International Circle Conference**
09:30-10:50 Presentations
10:55-11:15 Coffee break
11:20-12:55 Presentations
13:00-14:15 Lunch break
14:20-15:55 Presentations and closing formalities
17:15-18:30 Visit: Graphical and Digital Media department
18:30-20:30 Walking dinner

**Friday, October 16th - Company visits**
10:00 – 16:00 Reynders Labeling company visit (in association with three suppliers: Agfa, EskoArtwork, Punch Graphix)
18:30 Dinner

**Saturday, October 17th - Socio-Cultural Event**

**Sunday, October 18th - Departure**

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**Thomas Hoffmann-Walbeck**

## Seven Myths about Computer-to-Plate

In this lecture we will present seven common misunderstandings and wrong conclusions with respect to Computer-to-plate:

- Marketing pictures from plate manufacturers make people believe that printing surfaces of plates are smooth. That, in reality, does not hold.
- A "scan lines" is a path that a laser follows while imaging a plate. Most people believe that these scan lines are parallel to plate edges. We will see, why scan lines are askew and that therefore some kind of re-shuffling of picture data is necessary.
- It's a common misconception that thermal plates are "binary" and that there is a distinct energy threshold. Passing the threshold simply means imaging the plate and overexposing a plate does not lead to any further consequences. A simple experiment shows how incorrect that is.
- A usual trick in CtP is to mask the edges of a laser spot. The implication, however, that the remaining laser spot has a uniform energy level all over and does not fade out at the fringe, is wrong.
- What does plate resolution mean? This term is clearly defined for conventional plates but not so for CtP-plates. We will present the reasonings and how we could possibly overcome this flaw.
- In some student's text books the rasterization process is explained absolutely wrong. It will be explained in the lecture, how this process really works.
- Finally, myriads of students learn how to calculate the number of gray levels that can be defined by one raster cell. This simple formula, however, does not hold any more since over a decade.

More myths of these kinds could be added. We put only a few together, because we think, that they are good examples to sharpen the students wits and teaching them not to believe anything what they read or hear.

**About**

Professor Hochschule der Medien, Stuttgart - Germany

**Kerstin Alexander**

## Visualization in Technical Communication

Whoever tries to classify visual language within verbal systems is doomed to fail. The sheer number of different terms like "nonverbal illustrations", "visualization", "technical illustration"or "new graphics" points to the fact that in our culture area, no standardized concept let alone a concise system of classification exist. In the presentation the term "info graphics" is used as hypernym for all kinds of visual representations in the field of knowledge documentation. It investigates in different kinds of "info graphics" with respect to their design.

### 1 Systematization of visualization types

Every image is imitative, that means similar to the represented object. „Iconicity" describes the degree of this similarity. Technical illustrations can be differentiated with respect to their iconicity. The choice of realistic, stylized or abstract representation depends on the makers notion of what he considers relevant in that very case. The analysation of the pros and cons of visualization types leads to the conclusion that visualization types with the same degree of iconicity have nearly the same advantages and disadvantages in conveying information.

### 2 Requirements of visual representations

There are general requirements of visual representations in technical illustration. The content has to be **correct and complete** and very visualization should **speak for itself**. What does it mean? Comprehension of an image depends on cultural, social and professional understanding of convention und context shared between the illustrator und the user. If that understanding exists the most abstract image is less abstract than text can ever be. The iconicity speaks for itself.
The representation has to be in the right way **imitative, simple and consistent**. Consistency supports perception and comparability of images.

The large amount of information in technical illustration requires a **hierarchical design** and an **information-controlled structure**.
Use of colour and appropriate visualization type create **emotion**. The effect of an image even in technical communication has to be **emotional** and **stimulating**.

## 3 Information control codes

A core task of technical illustration is to control the information. Therefore implicit and explicit codes do exist. Implicit control codes refer to the quality of a representation. They include the appropriate information density in details, the amount of details, the design of contrast, line weights, tones, colours and textures.
Explicit control codes are details added to an illustration. They are mainly found in stylized illustrations.

## 4 Design concept and visualization type

It belongs to the characteristics of design that different design concepts can serve the same requirements. To underline this phenomenon two highly-contrasted examples of visualization types are presented – the flowchart as the most unemotional image und the cartoon as the most emotional image. Flowcharts are very abstract, but in some ways offer an alternative to text as key medium.
Because faces can be read easily the perception of a cartoon is simple. Depicting an uninteresting and boring chore can become a pleasure with a cartoon. Sometimes a little bit of humour is helpful even in technical communication.

## 5 Conclusion

Images will become more and more important in technical communication. The task we face every day is to pay attention to new tools and to keep them in balance with „old" requirements like the rules of perception.

**About**

Kerstin Alexander has been a professor for Technical Illustration and Graphic Design at the University of Applied Sciences in Merseburg for ten years. In the field of research, she focusses on visualization types in technical documents. From 1st September 2009, Mrs. Alexander will hold a professorship of Graphic Design at German University in Cairo.

## Olivier Parent

### UX Design for interactice media

Interactive media are products like any other. They are developed with the user, the market and technology in mind. Modern product development focuses on the user, without disregarding technology or the market. From the sound your vacuum cleaner makes to the smells that bombard your olfactory system during shopping at the supermarket or even the look and feel of the packaging in which your brand new mobile phone came, nothing is left to chance when it comes to giving you a great experience while shopping or using the product.

The interactive media industry – being an fairly new industry – has taken some time to finally jump on the user experience design bandwagon. The industry has evolved from being technology-driven over market-driven to user-driven. One way of doing  user-driven product development is by using the quintessential user-centred philosophy for interactive products, called UX Design.

In this presentation you will get a working definition of User Experience. An explanation of what exactly UX Design is and who's responsible for it. Finally some interesting facts about users will be given, as well as tips about designing User Experience for interactive media such as websites, Rich Internet Applications or even games. Most of these facts and tips are equally interesting for developing non-digital products.

**About**

He holds a Master's degree in Integrated Product Development and studied Multimedia and Communication Technology. He has worked for several high-end design agencies and interactive media companies in Brussels, Ghent, Stockholm, and London.

I. Karlović, M. Debeljak, D. Novaković, D. Gregor-Svetec

## The influence of accelerated ageing on colour difference of conventional and hybrid ink prints varnished with different amount of coatings

Coatings are used in both package printing and commercial printing to provide a wide range of value-added functions. In addition to aesthetic functional attributes, the coating is expected to provide additional and subjective graphic enhancement. In general, the primary function of an overprint varnish (OPV) or coating (aqueous, UV/EB, or solvent) is to protect the underlying inks and provide the necessary basis for the various processes. Other coating functions include increased rub and scuff resistance, slip or anti-skid properties, a higher or lower coefficient of friction, or even grease, alkali, alcohol, block, heat, or water resistance, or combinations of the above. Coatings can offer moisture vapour transmission barriers or gas barriers and, in other cases, permeation for oxygen, which is necessary for drying sheet fed offset inks. The accelerated ageing with moist and heat can show changes in some of the properties of the applied coatings, regarding their characteristics as protective layers in the function of preserving the original colour value of the printed product. In this paper we have examined sheet fed offset printed samples made with conventional and hybrid printing inks, coated with two anilox rollers of 60L/cm and 90L/cm. The conventional inks were coated with aqueous coating, and the hybrid inks with an UV coating. The samples were treated with accelerated ageing according to the ISO 5630-3:1997 Part 3 standard which stipulates ageing with moist heat treatment at 80 °C and 65 % relative humidity. The samples were treated and measured after 1, 2, 3 and 6 days and colour difference values were calculated for the solid patches of CMYK. The results have shown differences an increase in colour difference depending on the type and amount of coating.

**About**

Igor Karlovic is a teaching assistant at the Faculty of technical sciences, on the Department for graphic engineering and design in Novi Sad, Serbia. His field of work include colour reproduction and colour managent systems and other prepress related topics.

**Volodymyr Tkachenko, Natalia Gurieva, Nonna Kulishova**

## Information model of data transformation for color proof and printing

The investigation focuses on design of information model of reproduction system as well as technology of development of information control system of data transformation. In complex technical systems the information interchange occurs at semantic level. For the organization of an information exchange between various parts of the system, it is necessary to consider the design of the information model of technical system. Work is directed to provide full formalization and the organization of the information on various parameters of reproduction process. Process of information model developing consists in reception of system model of technical object considering all aspects which necessary for qualitative designing. During model development, the technical object was presented in the form of two-level system including the description, the analysis and the synthesis, and consisted of:

- the system model describing object under design;
- the system model consisting of the necessary information for process of design of technical object.

The system model of the description of the reproduction process includes structurally-parametrical (static – $\sum$) and functional (dynamic – $\Omega$) descriptions (1), as well as the aim of reproduction process (2). Connection of these descriptions represents unambiguous conformity: $\sum \rightarrow \Omega$.

It is possible to present two-level system model in the following form:

$$S = \left\{ \begin{array}{l} \left\{ {}^{k}P^{i}, \quad k = 0,1; \quad i = 1, n_k \right\}, \\ \left\{ {}^{k}\Sigma^{i} = <{}^{k}X, {}^{k}O, {}^{k}I, {}^{k}v, {}^{k}U, {}^{k}C, {}^{k}M, {}^{k}F, {}^{k}Q>^{i}, \quad k = 0,1; \quad i = 1, n_k \right\}, \\ \left\{ {}^{k}\Omega^{i} = <{}^{k}W_{\text{âõ}}, {}^{k}W_{\text{âûõ}}, \left\{ {}^{k-1}\Omega^{i} \right\} {}^{k}S_{\text{ô}}, {}^{k}R, {}^{k}T>^{i}, \quad k = 0,1; \quad i = 1, n_k \right\}, \end{array} \right. \tag{1}$$

where P is the set of the aims of design at $k$-th hierarchy level; $k$ = 0 is for zero- and 1 is for the first level of partitioning representing reproduction system as a whole or at level of its functional modules (FM); $i$ is the 1-st FM, a part of system at the first level of partitioning; is a number of FM at the given level of partitioning $(\text{at } k = 0 - n_k = 1)$; $X = \{L_i, a_i, b_i\}_{i=1,\ldots,m}$ is a set of coordinates of elements of the image, the print characteristic; $O = \{L_i, G_i, B_i\}_{i=1,\ldots,n}$ is a set of coordinates of pixels of the image, the original characteristic; $I$ is a set of names of functional modules; $v = \{\Phi_{ij}, \Psi_{ij}\}$ is the

profiles of devices defined by a set of $\Phi_{ij}$ and $\Psi_{ij}$, performing direct and reverse transformations between $i$-th device-dependent and device-independent color spaces for $j$-th color rendering intent; U are management parameters which are the operators of graded transformations, color corrections; $C$ are viewing conditions of a print product (spectral characteristics or color coordinates of a "white point" illumination); $M$ are characteristics of system "paint-paper" $M = (M_1, M_2)$ where $M_1 = \{\hat{X}_{\text{ò.á.}}, \hat{Y}_{\text{ò.á.}}, \hat{Z}_{\text{ò.á.}}\}$ are color coordinates of a white point of paper, $M_2 = \{\beta(\lambda_i)\}_{i=1,\ldots,N}$ is reflection spectrum; $F$ is the operator describing technological process of color reproduction in color imaging system; $Q$ is criterion of an estimation of quality of color reproduction; $W_{\text{âõ}}$ are entrance actions of an environment on functional modules; $W_{\text{âûõ}}$ are target actions of system on an environment; $S_{\text{ò}}$ is the structure of process of system functioning; $R$ is a set of living conditions and the process termination; $T$ is time.

The aim of reproduction process is to obtain the required color on a print by solving the problem:

$$P = (X, X^*) \rightarrow \min_{x}, \qquad (2)$$

where $P$ is color difference, which is defined by the metrics $\Delta E$ in device-independent space $Lab$, and $X^*$ are desirable values $Lab$ of coordinates of a print for the set type of illumination.

In order to solve the problem, the multidimensional color look-up tables of profiles with a glance of actual viewing conditions of prints for color image reproduction and recording devices have been created. Different printing tasks require different methods of color reproduction. Namely, one may need to print some firm colors, to match the input images as closely as possible or to print some photos with memorable colors. Suggested information model realized corresponding color reproduction to obtain color appearance across different media and devices.

**About**

Department of the Engineering and Computer Graphics, KhNURE, Kharkov, Ukraine

**Frank Roch**

## Statistical analysis of measurement result and its application on color distances

In quality assurance it is necessary to compare characteristics of products to quality requirements. Preferably, the deviations of measurable values characterising the products from appropriate setpoints are to be evaluated.

Unfortunately, in production processes the measurable characteristics of quantities of interest are not uniform all over the lot or edition. The measured values in fact are distributed over the more or less large surrounding area of a median value.

Often it will not be possible in long run work to measure the quantities of interest on all units produced. The quality assurance then has to be satisfied by a random test. Two results are requested: a) an estimation how good the mean value does fit to the target and b) a quantification of the scattering of the single values.

The calculation of the mean value is very simple in the one-dimensional case. In colour measurement each colour vector has three coordinates. For the purpose of colour control the difference vector between an actual reproduced colour referring to a target colour or setpoint has to be taken in account with all of its coordinates. However, in the practice traditional used is only one absolute colour distance instead of three values. This does restrict information and avoids knowledge about the direction of the colour deviation, of course. But even more problems will arise to calculate only the amount of the deviation, when measurement uncertainties and inhomogeneities of the samples are involved.

Then there seems to exist different possibilities to calculate a colour deviation such as

1. first computing the arithmetic means of the single differences between the samples and the target in all three colour coordinates independently and afterwards generating the colour distance from the mean coordinate deviations;

   or

2. first computing the single colour distances between the individual samples and the target and afterwards generating the arithmetic mean from them.

These different ways don't lead to the same value, of course.

In the paper is shown mathematically that method 1) is the only correct way to calculate the average colour distance. It describes the systematic deviation between the sample colour and the reference colour, averaged over inaccuracies. Method 2) is a measure for the scattering because it is a mean of absolute values. Totally regardless of this fact in the practice by the majority this second method is used to estimate the quality of a reproduction in comparison with a target or master pattern.

Moreover, in the paper are figured out equations for calculating the correct dispersion parameter for the scattering of the single colours which describes the closeness of the reproduction at the one hand side and a measure for the accuracy of the computed value of the mean colour distance at the other hand side.

**About**

Professorship in Measurement Technology and Quality Management - Departmental Coordinator International Relations. Teaching in Measurement Technology, Design of Experiments, Laser Technology and Holography, Quality Management.

## Marc De Mey

### HD Flexo, revolutionising digital flexo plate making

HD flexo holds the promise to achieve offset quality using flexo printing by achieving full tonal range both on the flexo plate as well as on the press.

HD Flexo is a new technology for digital flexo plate making that revolutionizes digital flexo. HD Flexo offers laser plate imaging which is both high quality and high lineature as well as easy to use and implement. HD Flexo builds on a combination of high resolution laser optics which images a flexo plate at 4000 ppi and screening technology developed to hold the full tonal range on the plate and on the press. The new technology enables flexo printers in flexible packaging and label segments to print even the most complex jobs at an "offset-like" quality, thereby overcoming the traditional limitations of flexo printing and the necessity for intensive image retouching work. Linework and text are imaged sharper on the flexo plate resulting in cleaner print, especially for small typefaces. Screen dots are more perfectly round, resulting in plates that last longer with fewer washing cycles on the press. In summary: HD Flexo is a revolutionary imaging technology for digital plates that increases press uptime (cost saving) and a more stable flexo printing process.

**About**

Application specialist Digital Flexo - EskoArtwork

**Jan De Roeck**

## Intelligent Packaging Design

Packaging and label converters are looking for value-add features as a competitive differentiator. This paper provides an overview of recent research and development in packaging design and prepress software.

The days that structural design data (CAD) is merely used to manufacture die-cutting equipment are behind us. Nowadays structural design files are data-rich assets that enable mush more than that. CAD data stimulates collaboration between supply chain stakeholders by the ability to render hyper-realistic 3 dimensional previews and animated shop shelf simulations. Structural design data of primary and secondary packages carry information about size and shape, material characteristics and other data pointers. This way, CAD data (and the entity in the supply chain that owns such data) is positioned "par excellence" to add value at different places in the packaging supply chain. Not only in the field of graphic design and prepress, but also in transport logistics optimization and lifecycle analysis as well as online customer response analysis and in-store shelf simulation. This paper brings the audience updated insights in software technology in function of an efficient packaging and label print supply chain.

**About**

Director Solutions Management - EskoArtwork

**Ide Claessen**
**Jeroen Van Bauwel**

## Tetra research project on packaging

What is IWT (Institute for Encouragement of Innovation through Science and Technology Flanders) and the TETRA fund?
Who else is supporting this project? (Commission of important players in the graphical industry)
The initial project proposal had the goal to try and create a general color profile for digital and conventional printing to bring the two segments closer together. The complexity of this matter forced the research team to narrow down the initial goal and they decided to study the market of color issues for digital and conventional printing in the packaging industry because of the high importance of color reproduction in this particular segment of the industry.
The team is trying through interviews and surveys to get better insight on what packaging printers are really expecting on this matter.

- Producers are inventing numerous ways to reproduce color and to color proof. Everybody is talking about color proofing and color management.
- But what is really important for the average packaging printer, what are they struggling with?
- Which markets are truly evolving into digital printing?

A survey has been developed and has been internationally spread and published to get the first answers and a better picture.
Eventually through these results we will try to find a narrowed down research subject for an extended scientific project.

- Online international survey can be accessed through www.packagingprintingsurvey.com: start mid September – ending end of October
- Present at Label Expo 2009 to push survey input and gather updated details on label industry

The results are available at www.packagingprintingsurvey.com
The project can be followed at http://www.innovatienetwerk.be/projects/1384

**About**

Jeroen Van Bauwel, Product Manager at Punch Graphix (Xeikon, Belgium) and over 10 years of extended experience in the digital printing market. Currently team member of the Tetra 80120 Research Project, on color and color profiles for conventional and digital printing, at University College Arteveldehogeschool, Graphical and Digital Media, Ghent, Belgium.

**Daniel Bohn**
**Michael Dattner**

## European Energy Efficiency Improvement by means of Visualisation and Benchmarking tailored to the Print and Media Industry

The objective of the European Energy Efficiency Improvement (EEEI) Project is to raise awareness on energy topics within the print and media industry on the European scale. As a start, an EU-wide inventory has been conducted, where directives on energy efficiency and a review of main literature has been included. This is completed by gathering best practice on energy efficiency in the sector. The whole survey is the base for the development of a set of tools which can help to remove observed barriers that inhibit efficiency improvement in small and media sized enterprises. The main tool is named E-BAG (Energy Benchmark Analyzer for Graphic Media) which elaborates benchmark results from a database.

To get beyond the level of awareness improvement, current approaches concerning benchmarking are extended by a system of more detailed sector specific key figures and visualisation methods.

**About**

Daniel Bohn is a master student for print and media production at the Bergischen Universität Wuppertal. In the context of his studies he collaborated in an EU-Project named EEEI with the aim to raise the energy efficiency in the European Print and Media industry.

Michael Dattner finished his study programme in mathematics at the TU in Kaiserslautern, 2005. The development of a colour prediction model is the main focus of his doctoral thesis. He is also active in topics of environmental sustainability in the print and media sector.

**Bohdan Durniak**
**Yaroslav Uhryn**

## Development of Packaging Industry in Ukraine

Ukraine has always been considered by its neighbours as a land of plenty. Its fertile soils, mild climate, favourable geographical location and scientific researches of the Ukrainian scientists served the basis for growing good crops and producing a lot of food. Nowadays 70-80% of foodstuffs represented on the local market are produced in Ukraine. This fact dramatically changed the field of packaging production which enables our food producers to compete successfully on the Ukrainian and world markets.

According to the world tendencies, the development of packaging industry in Ukraine is influenced by several reasons:

- economic situation in the field of food production and consuming;
- development of wholesale and retail distribution networks;
- demographical and social changes in our society;
- world trends in the development of packaging production, materials, technologies and equipment.

Since 1990-ies the packaging industry in Ukraine has been growing very fast and now it occupies 4,1% of IGR (Internal Gross Revenue) which is equal to 33500 thousands of tons of items per person.

Ukrainian companies are highly involved in the process of packaging production as it is a very beneficial and prospective business. Many world-known enterprises "Ukrplastyk", "BlitzPack", "Uniplast", "Thermo-Pack", "Saint-Gobain Zoria" and others produce all sorts of packaging: flexible, vacuum, polymeric, aluminium, glass, cardboard, etc. These companies use new technologies, modern equipment and employ a highly qualified stuff.We understand well the necessity to have highly qualified specialists able to work with modern technologies and equipment. Every year a number of higher educational establishments training specialists for this field increases.

However, all of our packaging producers have to import raw materials, technologies, software and equipment from other countries. Ukrainian plants produce the equipment only for packing, marking and labeling. This is the reason for Ukrainian government to work on the laws facilitating tariffing and duty procedures and think about involving investors in this business.

In spite of these difficulties the industry of packaging production in Ukraine is a very cost-effective business with high potential for the future.

**About**

Dr Habil. Prof.Bohdan Durniak is Rector of the Ukrainian Academy of Printing, Scientific Researches in the fields of Engineering, Automation and Computer Technologies.

Dr. Yaroslav Uhryn is Vice-Rector of the Ukrainian Academy of Printing, Dr of Technical Sciences. Scientific Researches in the field of Packaging Design, Optimization of Educational Processes.

**Louise-Lotte Brekelmans**
**Petra Sell**

## Never designed a website. Over & out!

The internet exists since the 1990's and has been widely accessible since 1996. Today 1,7 billion people use the internet. Yet still so many designers leave school not knowing how to design a creative website. Students in general and especially the women are often not inspired to study web-design but they don't know how essential it is when finding a design job. They don't know what they are missing.

Internet is always changing, and always reinventing itself. Designing for the web challenges the designer to think interactively. Web-design is hip and fresh, extremely exciting and being copied by many other media. A web-designer can still make inventive designs, whereas in print design it is harder to find examples of what has never been done before.

Also design is becoming more and more media independent. As with advertising there is no real boundary anymore between on- and offline, and so a designer is expected to design for both worlds. A case almost does not exist anymore without a website.

However there are many cases where beautiful print design goes together with ugly web-design. (We show several cases). At Boondoggle coming from online we realize what a difference you can make when you can have the best of both worlds. Integrated campaigns that are both beautiful and well thought out, are our success formula. They deliver a 'beyond the promise' experience and we think are the future of both design and advertising. (We show some Boondoggle cases).

**About**

Louise-Lotte Brekelmans graduated with a Bachelors degree in Graphic Design from the University of Maryland (UMBC) in 1996. She has been working in design and ad agencies in The Netherlands and Belgium for almost 10 years. She currently works for Boondoggle Leuven.

Petra Sell graduated with a Bachelors degree Communication Design from Fachhochschule Munich in 1999. She also has 10 years design experience working in London, Amsterdam, Antwerp and has been working at Boondoggle Leuven since 2003.

**Tommie Nyström**

## Trends in media consumption in Western Europe

This presentation will sum up the results of a series of reports and research concerning the current media consumption and identify some of the most important trends, which can be of interest for the publishing and printing industry and educational institutions in this sector. Main focus will be on news consumption in Scandinavia and Western Europe.

According to a survey targeting Swedish people, new media, e.g. Internet and mobile phones, are more necessary than traditional media (fixed phone, TV, newspapers) for young people. When looking at media consumption per country we can see that TV in general is still, with some exception, the highest reaching medium, with more than 85 percent penetration. However, the recession of analogue TV that began in the 1980s, aggravated after 2000, will continue and analogue television is expected to disappear by 2020.

Printed newspapers still have penetration of more than 60 percent in Germany, China, the United States, Italy, and the United Kingdom, but the reach is particularly lower in France and Russia, with less than 20 percent.

The Internet has a reach of more than 65 percent in most western countries. In Scandinavia, penetration is more than 80 percent. Internet will become the primary news and information source within five years, while newspapers will lose the dominating position they have held for more than a century.

Thanks to the emergence of various new formats, overall media consumption continues to grow. The consumption is expected to push total consumption up to 90 hours per week in 2020, compared to 60 hours per week in 2000 and 25 hours per week in 1950.

In the 90s, the free daily newspaper (freelies) appeared on the media market, putting an extra stress on the traditional newspapers. The numbers of freelies in Europe have increased from 39 titles in 2002 to 161 in 2006. Through new distribution methods the freelies are also catching a lost generation of readers for newspapers: affluent young professionals.

The media habits of young people born between 1966 and 1994 (often called Generation X and Y) have also been subject for studies. This group likes reading news, but do not wish to pay for it. They like to look up the information themselves; they do not want it pushed out. They dislike insistent advertisement.

As the readers move from reading printed news to reading online news, a great part of the advertisement market follows. Surveys conclude that newspapers should not stick to print advertising as their sole revenue source, but should embrace new opportunities in digital formats since marketers would like to use new ad formats more than they would like to use print ads.

Even though many newspapers today have larger revenues from web editions than printed editions, studies report that newspapers migrating to online continue concentrating on the print side. There are several areas where changes must be made for the companies producing newspapers; the media trends show the way. The web edition of the newspaper will become the main edition; a printed edition that has undergone a variety of changes will supplement it. The change may concern distribution and subscription methods. Periodicity will change since fast news will be searched for and read on the web. The design will go to tabloid format with a magazine feel and content with longer, analyzing articles. The news coverage will go from journalistic institutions to individual journalists and storytellers on the multiple markets.

Acknowledging the development of phenomena like social media, Creative Commons and blogosphere, current professions in media will undergo big changes, some professions will vanish and new will appear.

**About**

Guest Lecturer in Graphic Communication at Stuttgart Media University (HdM), Stuttgart, Germany - External expert at EACEA (The Education, Audiovisual and Culture Executive Agency) - Lecturer in Graphic Communication at Linköping University, Sweden.

**Maarten Penninckx**

## Peer Assisted Learning in Post-secondary education

During this presentation, Arteveldehogeschool's Office of Educational Development and Internalisation will report about the experiences of two pilot projects in the Bachelor Program of Graphic and Digital Media. During those two experiments, the method of Peer Assisted Learning was integrated as part of the regular educational process.

Peer Assisted Learning (PAL) can be described as 'people from similar groupings who are not professional teachers, helping each other to learn and learning themselves by teaching' (Topping, 1998).

We decided to introduce PAL for a wide range of reasons, including:
- the very heterogenous profiles of students in one classroom,
- the large inflow of students of 'technical or professional secondary education' who are a high-risk group for drop-out during the Bachelor Program, and
- the tendencies to try new educational methods in order to obtain a more profound understanding of the learning materials and to increase the social cohesion of the students.

Two experiments were set up in which students of the final grade ('tutors') assisted the students of the first grade ('tutees') in gaining new knowledge and skills, thus contributing to essential professional competencies.

Our experiments mostly confirmed the advantages as described in the literature on PAL. We found PAL has an added value for both tutors and tutees. Students of the first year had a higher involvement towards the course and achieved better learning results. The tutors developed their critical thinking and self-reflection skills, as well as their ability to coach other people. Students from both groups assessed the PAL method as being very valuable to them.

Although both experiments demonstrated the efficiency and efficacy of PAL, we also encountered some difficulties. These challenging problems resulted in a list of conditions that determine the success of the application of PAL on the classroom floor. While the first experiment showed us the need for a good training and follow-up of the tutors, the second experiment indicated that PAL requires a strict planning and organisation, a clear set of communication materials and enough possibilities for the tutors to coach the tutees during the learning process. Obviously also teacher's motivation and flexibility are critical determinants of success.

Arteveldehogeschool's Bachelor Program of Graphic and Digital Media is convinced of the added value of PAL for tutees, tutors and teachers. A strict monitoring of processes and outcomes will help us to evaluate and strengthen the concrete operationalisation each year.

**About**

He is staff at the office for Educational Development and Internationalisation in the University College Arteveldehogeschool. His main duties are to assist Bachelor Programs in generating a competence-based curriculum and to support lecturers in the application of Peer Assisted Learning.

## Gillian Mothersill

### The MMORPG (Massive Multiplayer RolePlaying Game) as a potential Teaching Tool for Graphic and Print Technology

This presentation investigates the potential development and use of Massive Multiplayer Online RolePlaying Games as a supplementary technology for teaching graphic arts and printing technology. Universities worldwide face barriers to the introduction of new technologies including lack of space, operational costs, and rapid technological obsolescence. The MMORPG is seen by many universities as a means of engaging students in applied education and overcoming these barriers.

The School of Graphic Communications Management at Ryerson University has operating press simulators for over a decade. Simulators were initially purchased as a means of providing students with the opportunity to learn about printing operations other than lithography (such as gravure or flexography). Faculty members programmed the simulators with problem sets to simulate print room problems allowing students evaluate and solve problems as part of their lab requirements.

This presentation also examines the drawbacks of MMORPG simulators in other fields and forecasts their success in printing and the graphic arts.

**About**

Gillian Mothersill is an Associate Professor in the School of Graphic Communications Management at Ryerson University. She is currently the Associate Dean, Faculty and Student Affairs, for the Faculty of Communication & Design. Her research interests include typography and page design.

**Desen Qu**

## The development of Chinese Higher Education in Graphic Arts

The graphic arts education in china developed rapidly in the past thirty years. There are there levels in this area, undergraduate education; vocational education and continue education. Almost 30 universities have graphic arts subject in undergraduate level and more than 10000 students choose this subject every year. For undergraduate education, there is a very clear poisoning, that is based on the modern technology, for graphic arts and relevant industry, cultivate the advanced professional who got very good educated and full of innovation and practical ability. Especially, the environment of education has upgrade not only in hard ware (lab etc) but also in soft ware, for example, the number of professors and science research. Some university started to provide the master and doctor degree in graphic arts. Vocational education also developed very fast, and we more emphasis the skill ability and design the major according the demand of industry, and we also have developed many cultivate model to adapt the demand of industry, for example, cultivate by order or alternate in studying and working, etc. Through rapid development, continue education in graphic arts has become more and more sophisticated, most continue education's resource come from university. They have very flexible subject and all course was designed by the demand of industry. There must be more demands of advanced professional with the development of graphic arts industry, so the higher education need upgrade the quality of teaching, try to cooperate with the industry.

**About**

Desen Qu, Professor, President of Beijing Institute of Graphic Communication

**Eva Vande Populiere**
**Bart Verstappen**

## RTC-project: Say it with colour

The Belgian graphical sector is a high-tech sector which tries to satisfy the modern communication needs. There is this well known expression: Unknown, unloved. Youngsters are very keen on new media, but neglect the important industry of the graphical media more and more.

We observe that the emphasis on graphical oriented programs in Belgian secondary and higher education is diminishing. Nevertheless there is a permanent need in the graphical sector for well trained and motivated people to meet the requirements in professional vacancies.

In January 2008 the Graphical and Digital Media department of the University College Arteveldehogeschool launched a program to make young people interested in a graphical career. This project which originated in cooperation with the "Regional Technological Centre" has the following goals:

- to put graphical knowledge, expertise and infrastructure at the disposal of different target groups;
- to distribute knowledge to the technical and vocational secondary educational personnel;
- to encourage young people to attend graphical secondary education in order to ensure the students' flow to higher education.

Under the flag "Say it with colours" a variety of didactical packages, a didactical lending kit and practical sessions for teachers and youngsters in technical and vocational education was developed.

In case you are eager to get more information about this project please feel free to contact us.

**About**

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## Eddy Hagen

### Is quality control in the printing industry build on quick sand?

Is quality control in the printing industry build on quick sand?

Quality and more specifically colour quality is key in the printing industry. Print buyers demand very small tolerances when comparing the printed product with the proofs, with the specifications. And also within a print run or between two print runs. To control the color accuracy specialized equipment is used: spectrophotometers. Colour deviations are expressed in delta E. But do print buyers really know what delta E means, how they should interpret it? E.g. that there are multiple versions of delta E. And how about the accuracy of the spectrophotometers? Especially if you are comparing measurements of two different devices, from the same brand of maybe even from two different brands.

In a study VIGC, the Flemish Innovation Center for Graphic Communications, has tested over 20 different spectrophotometers. Devices that are used on a daily basis by printing companies. And the results are not what people would expect from such an important device… We saw deviations up to a delta E of nearly 4, while many customers are demanding a maximum delta E of 2 for quality print jobs. Which means that the color deviation of a 'bad' print job might just be due to the deviations of the measurement device… And this is something we have already seen in daily live: according to the spectrophotometer of the printer a job is within specifications, but when the print buyers measures is with his device, it's out of specs…

In the presentation VIGC will explain its testing method, the results that were found. We will also bring some possible causes for the deviations found.

**About**

Eddy Hagen, managing director and trend watcher VIGC

Ivana Ziljak, Klaudio Pap, Vilko Ziljak and Jana Z. Vujic

## Infrared reproduction and device dependent process colors

The innovation is in using the characteristics of natural colors in creating reproductions with diverse appearance of images; firstly in daylight and secondly under infrared (IR) light. We set a double image, two pieces of information created by printing with process color. Similar, as in the conventional reproduction, process colors are used in CMYKIR with the target to have two images manifested in one on the same print. There are two images in two different states for recognition. The color image is observed in daylight and a completely different image is observed in infrared light. The planned image, the image set for infrared light abandons the GCR, UCA and UCR methods that do not know the control of exceptional use of the infrared wavelength area.
The image under infrared light depends on the instruments enabling it to be observed. It is primarily an image in the grayscale gradation. It may be emphasized with pseudo color but in this paper it is not important for now. Infrared reproduction is prepared for real printing, device dependent in respect to CMYK color space. We can set theoretical basis for infrared reproduction, but reproduction is application in set conditions of the dye in question; the material type onto which the dye is printed and printing technique. In this respect we are discussing herewith about the color setting system differences with the goal to have successful infrared reproductions. The contribution of infrared reproduction is in security printing on securities and packaging material, the design of two pieces of information and in testing the color setting accuracy.
IR reproduction is very sensitive to device dependent printing color space. Each error is seen in the daylight range. The new private color setting may be tested through IR reproduction by using the method of hiding the IR image in the broad range of replacing printing CMY dyes with carbon black. This "infrared objective" is not developed in methods of GCR, UCR and UCA quality evaluation. IR reproduction uses continuous space defined analogously with given "IR goal" replacement carbon black with printing dyes cyan, magenta and yellow. It is a test for the nature of dyes, their characteristics. It is also a proposal on the way to set parameter alternating between two different color spaces. This is because a broad range of carbon black space is used, determined analytically depending on other printing dyes.

**About**

Ph.D.Sc.Klaudio Pap is assistant professor on the Faculty of Graphic Arts. He also gives lectures at the Polytehnic of Zagreb. He is the co-writer of four books and has published more then 50 scientific articles. He is the co-author of five development products and six software packages. products and six software packages. Since 2005 he has been a associate member of the Croatian Technical Science Academy.

**Oleksandr Tykhostup**

## Hybrid moiré-free screening technique

There are two main screening algorithms used in printing production - frequency-modulated (FM) or stochastic and amplitude-modulated (AM) or regular screening. There are also their modifications (second-order stochastic, irrational, rational tangent screening, etc.) and combinations of these methods. AM screening places halftone dots in a consistent pattern, varying the size of the individual dots to simulate the tone values of the original. It has proven to be very stable and to produce the most realistic middle tones. FM screening randomly places dots of the same size, in different concentrations, to reproduce continuous tone. With the help of FM method, it is possible to produce high-quality detailed prints with areas of highlights and shadows, and to eliminate the moiré effect that is associated with AM screening.

Considerable shortcomings in both algorithms, as well as the fact that their strong points supplement each other led to the development of combined or hybrid screening algorithms. As a result of the analysis considerable advantages of combined rasters are found out, notally: increasing of color coverage, ink savings and its ability to dry up more quickly, rising of productivity and decreasing of wastage, higher screen frequency.

Different screening algorithms for various printing techniques are investigated. The way of using combined screening technology for the purpose of avoiding of moiré effect occurrence in four-color flexography printing is offered.

It is determined that at screen angles between two colors – yellow and magenta, greater than or equal to fifteen degrees, application of stochastic screening in yellow color and regular in other colors of CMYK color model is possible. Results of researches have shown that the given combination of raster structures leads to reduction of moiré occurrence probability, especially in a range of optical density within the limits of 0-10%. Thus quality of color reproduction remains without changes as the ICC profile does not require change and color coverage does not vary. Application of stochastic rasters for other colors is inexpedient, as they have wider reflection spectrum and give the big difference of optical density that leads to reduction of color reproduction stability.

**About**

Department of technologies for printing production
National Technical University of Ukraine „Kyiv Polytechnical institute"
Publishing and printing institute

**Anayath Rajendrakumar**

## How to develop a sustainable strategy for a printing organization in this global financial meltdown?

This research paper discusses about:

- Hitech life cycle of print business
- How to find out the existing profile of your organisation?
- How to prioritise the critical business success factors?
- How to find out the right product focus for the future?
- What are the solutions to increase the organisations potential opportunities?
- How to implement these solutions and take appropriate measures to exploit these potential opportunities.
- How to implement the most suitable improvement programme which will have the greatest impact on the organisations efficiency.

Based on the above analysis result you will come to know whether to:

– Invest further or focus on core competencies;

or

– Outsource or leave way to others.

**About**

Head, PMA-Heidelberg India

**Oleg Pankin**

## Principles of contractual soft proof

One of the key factors in assessing the quality of the printing process is the quality of color that can not be at a high level without the tools to control the reproduction of color at every stage of production.

This work is the beginning of the cycle of research by developing soft proof system functioning as a remote color proof possible for use as a contractual obligation between the parties, printing production and serve as the visual basis for the operator of the printing machine.

To ensure the work of the developed color proof system, the research describes the technical regulations required to be established between the participants of printing production.

It is proposed to comply with a number of conditions of observation, providing a correct perception of the image on the screen of SPS.

There is a proposal of methodology and regulation for the colorimetric setup of monitor inside the SPS in the work. The parameters of this setup were fixed.

The work includes the development of workflow of generating of agreement image file for the SPS.

The paper assesses the colorimetric characteristics of SPS.

During the instrumental analysis of quality of color reproduction of developed SPS, assessment of color differences on the parameters of the substrate, screen ruling of printing process, and triad color of subtractive synthesis.

During comparing the results of color reproduction for different screen rulings, it could be said about inessential superiority in SPS color reproduction quality for higher screen ruling. At the same time mentioned superiority is so slight that it could be said about independence of color reproduction from screen ruling of printing process parameter.Among the substrates the worst color reproduction quality elaborating SPS has on application of metallized polypropylene laminated with transparent polypropylene and two layers of transparent polypropylene as the substrates. It is conditioned by complexity of transferring the surface characteristics of these materials using modern visualization means, explotable in present-day monitors.

There is also a possibility of inaccurate measuring as during the experiment also in process of building color profile of printing process, that is also caused by surface characteristics of mentioned materials.

In general, the ΔE2000 values for the full range of parameters of reproduction of triad colors ranging from 2 to 4. This indicates a good quality of SPS color reproduction. The exceptions are the values ΔE2000 in saturated cyan tones. This is conditioned by the restrictions applied on researched system by usage of abstract sRGB color space as standard color space, because sRGB has limited color gamut in cyan tones area. The same shortcoming has every modern monitor, including monitor used in research.

As a whole, analyzing received during experiment data, on condition that the described regulations would be kept, it could be stated about possibility of usage researched soft proof system for estimation and agreement of color, in other words as a contractual color proof system.

Given conclusion may be done, first of all, concerning printing process researched in work, that is the flexography printing process. But flexography is one of the least stable and predictable printing process among using nowadays, and this allows to talk about the possibility of usage of researched method for wider range of printing processes. Which, in its turn, needs more researches and scientific confirmation.

**About**

Post-graduate student of MSUPA
Scientific adviser: Doctor of Science, professor Uriy Sergeevich Andreev

**Anokhina Evgenia**

## Properties of polymeric films, modified with glowing charge

Recently, printing on substrates from polymeric films has become very widespread. First of all it is connected with rapid development of industry for vivid-colour packaging products made of polymeric materials. Besides, interest in printing on polymeric films is growing up greatly because of application new processes of making electronic microschemas using polygraphic methods.

As a rule, polymeric materials are characterized by low value of surface energy, they are badly wetted by solvents, badly stick together, have low adhesion to sprayed layers of metals, etc. One of the more perspective and modern methods of modification polymeric film surface is influence by temperature plasma, which allows to change surface properties of the materials very widely and to greatly extend the area or theirs application.

The most intensively, especially in Russia, production of products packaging is developing. In increasing frequency polymeric films from polyethylene, polypropylene, polyethylene terephthalate are used as a packaging material as for foodstuffs and other products. The multi-layer films also are applied for these purposes.

During the experiments production pieces of the polymeric films from polypropylene and polyethylene of high pressure were used. As a hostile environment for simulation interaction between solvents of printing inks and polymeric films surface are used such a liquids as hexane, acetone, isopropanolamine.

Experimental results show that activation of polymeric films in glowing charge plasma leads to increasing of wetting ability and essential growing of adhesive capacity of activated polymeric films surface. It means that modification may heighten printing quality because of improving of fixing printing ink on the sealed surface. Modification practically doesn't influence on their physical-mechanical properties, but at the same time creeping of polymeric material in organic solvents distinctly decreases. It provides additional strength of the film as in printing process it undergoes substantial deformation in printing zone.

**About**

My name is Anokhina Evgenia. This year I graduated from Moscow State University of Graphic art. My faculty is a faculty of printing equipment and technology. I decided to continue education in postgraduate study. The area of my professional interest is quality management.

**Melanie Herzau**

## Analysis on creasing and embossing of carton material

The appearance of covers and boxes gained more denotation in the last years. Surface refinements to enhance carton material became more important. Due to this new development there are nearly no investigations available in this field up to now.

The aim of the recent analysis was to find out modifications of the measurable properties of the material and the process properties during creasing and embossing in result of the refinement – and finally to create a model which shows the dependence between natural and refined material.

In preliminary tests some different materials were chosen which should be analysed in the main experiments. Different investigations were done to characterise the cartons. The process properties were determined by measurements on the appearance during creasing, folding and embossing.

The pre-tests showed that lacquering does not influence the material and process properties. Therefore, only uncoated and coated material was analysed in the main experiments. The results were tabulated, compared in diagrams and supported by statistical investigations.

When the carton material is coated with a foil the tensile strength, the bursting strength and the flexural rigidity are increasing. The interlaminar strength changes only slightly. The interlaminar strength is an indicator of the coherence of the fibres and is not so much changed when carton is coated. The compressibility decreases slightly, because the material was already compressed during the coating.

For creasing and embossing the height of the moulding is decreased with the coated foil. Carton that normally cracks is not cracking with the coating. This is an advantage for embossing. But the height of the embossing is lower, that's why the change in the optical appearance is less. The same principle as valid for creasing.

The coating causes changes of the material properties as well as the process properties. But there was no general model found for these modifications. Carton is a multifarious material in its compounding. Therefore it was impossible to create a model that shows the dependence between natural and refined material.

**About**

Construction engineer of corrugated paper boxes
Special interests: Developments concerning RFID technology and Properties and appearance of biodegradable materials

**Jan Liefers**
**Connor Stroomberg**

## How to use usability testing with eye tracking in the curriculum of the study Communication Systems

Since 2006, the study Communication Systems of the Hanzehogeschool Groningen has the possession of a usability lab. This lab is equipped with an eye tracker. This paper describes hoe the study is organized and how usability testing with an eye tracker is used in the curriculum.

The study is competency based. The education is organized in themes in which a professional product plays a central role. Solving the problem comprises various professional roles ranging from year 1 to 4 from operational tot strategical levels. Theoretical knowledge and personal skills merge in projects which are in most cases derived from real life organizations with real problems.

In a second-year theme Interaction Design and Usability, we focus on solving real-life usability problems in websites or multimedia applications. After some lessons in Usability Engineering and Usability Testing, students use our usability lab trying to find sticking points in these applications. Testing methods they use are: heuristic evaluation, (retrospective) think-aloud, co-creation, and question-asking.

They first make a task analysis where they describe in detail how the application is being used including the sticking points. Users of the application fulfill this task in our usability lab. Recorded are: mouse movements, screen recordings, audio en video of the user (webcam) and eye tracking. The testing method mostly used is retrospective think-aloud in conjunction with an eye tracker (Tobii T60).

Students are very enthusiastic using an eye tracker in an usability test. Firstly, results from the data such as heat maps are very instructing in the learning process and for constituents. Furthermore, observing test persons while performing a task shows clearly the effect of bad usability.

**About**

Jan Liefers is team manager of  at the Hanze University of Applied Sciences at the communication systems department and worked for many yours as a teacher of media.

Connor Stroomberg is Master of Science (Information science) and a teacher of usability research. He coordinates the course interaction design and usability at the communication systems department of the Hanze University of Applied Sciences.

## Notes

## Notes

## Notes


41st Conference of the International Circle
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Graphical and Digital Media department
University College Arteveldehogeschool
Ghent, Belgium

**University College Arteveldehogeschool Belgium**