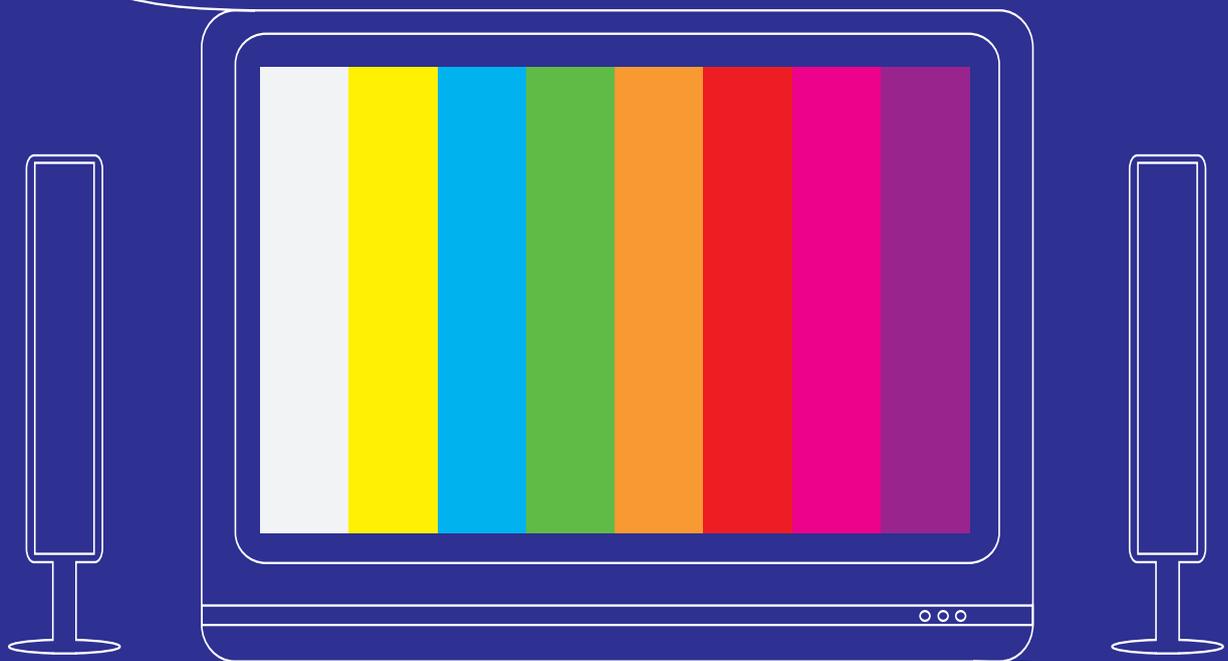


SPECIAL REPORT

by **cleverdis**
information intelligence



Achieving Colour Like No Other



sponsored by **SONY**

Editorial

by Richard Barnes

Look around you. Look up, down, left and right... don't concentrate on exactly what's there. What do you see? Colours... Our environment is made of light... and subsequently colours, and the near-perfect reproduction of these colours on your TV screen is vital when it comes to "feeling good" when you're watching the screen. With the launch of their new BRAVIA branded TV's, Sony have gone one step further to providing "Colour Like No Other" in the field of new technology TV's. Sony's new TV advertisement, with hundreds of thousands of coloured balls bouncing through the streets of San Francisco, is aimed at drawing public attention to the importance of colour on TV.



Richard Barnes
Editor in Chief - CLEVERDIS

This philosophy differentiates Sony from other brands that are investing heavily in the promotion of virtually everything except what's on the screen itself and brings Sony back to its core competency – encapsulated in one word – "Quality".

By the same token, Sony's sponsored research has uncovered the glaring fact that the buying public around Europe is largely at a loss when it comes to choosing a "new-tech" flat screen TV, despite the fact that people know they want quality... They don't know what to look for!

This Special Report has been commissioned by Sony in order to outline on the one hand the dilemma of reproducing true colours on new

technology TVs – especially LCD – and on the other hand, the way in which Sony is investing energy and resources into "ACHIEVING COLOUR LIKE NO OTHER"...

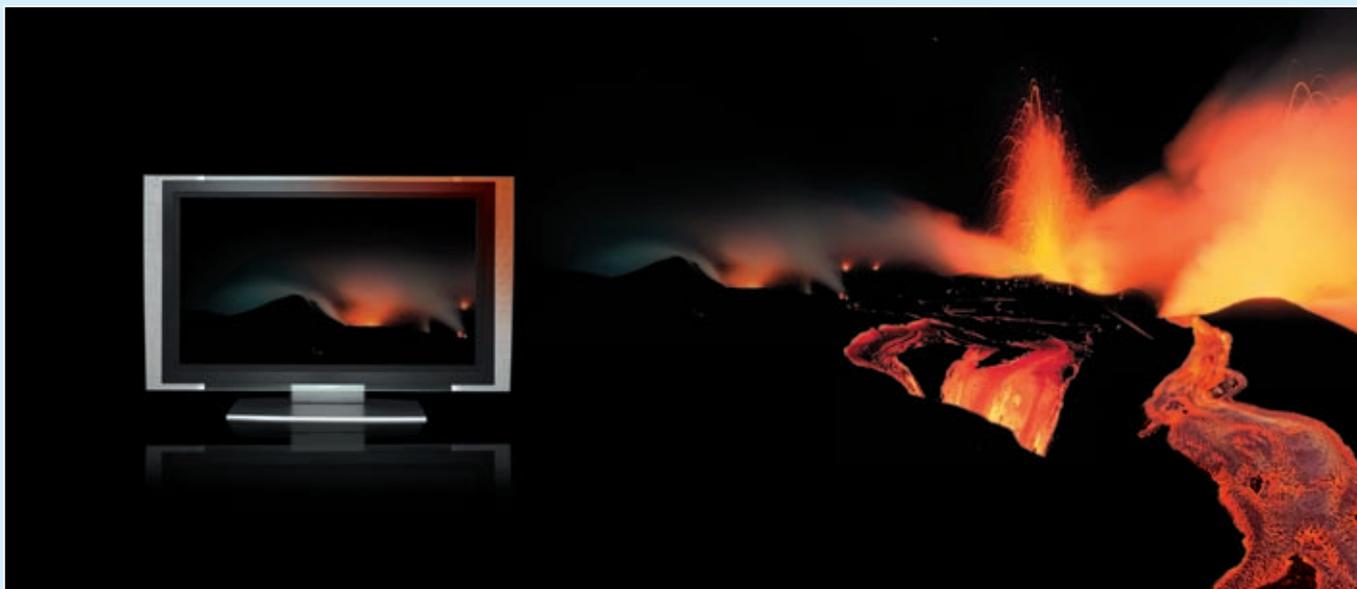
But providing "good colour" is not enough. Sony is aiming to differentiate its current and future ranges of LCD TV's through the adage of "Colour like.no.other"... But the company plans to back-up this slogan with facts, and has engaged renowned scientists, technicians and psychologists around the world to work in harmony with top-flight in-house engineers in an effort to create a picture which is as life-like as possible.

We hope the following articles and interviews will enable you to better understand the background to Sony's ongoing dedication to image perfection in the new-tech TV market.

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The Fine Art (or Science) of Getting Colour Right



The reproduction of true colours is becoming increasingly important, not only from the broadcast signal, but from other various sources such as high-definition recording formats, camcorders, and PC game software.

How does Sony work towards Highest Picture Quality – including colour quality?

Picture Quality basically comes from 4 factors:

- Resolution
- Gradation
- Colour Space
- Contrast

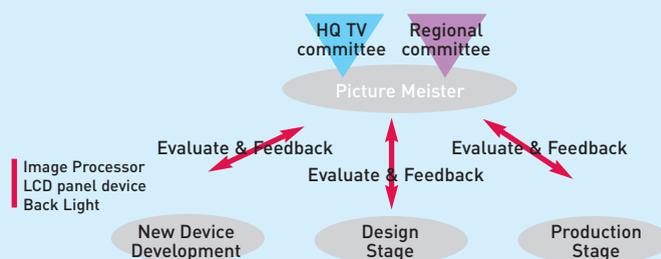
How Sony Evaluates Quality

In Tokyo, Sony has a picture and sound quality evaluation organization called the “Digital Reference lab” employing several experts who have a long background in image perfection – dating back to the Trinitron era. In the lab, they use special software and equipment to evaluate quality.

Due to their superior knowledge and know-how, Sony is very guarded about even letting it be known outside the organisation as to who they are... likening the unit to the company’s “black box”!

The standards for evaluating new TV sets are based on strict processes, outlined in complex internal documents that are used as a basis for all personnel who work on “getting the picture right”.

With input from both the HQ-based TV evaluation committee and the regional committees, the “Picture Meister” works on new device development from the design stage right up to the production stage, ensuring worldwide quality standards are combined with local adjustments. When testing TV’s, Sony asks numerous divisions concerned with the roll-out of the set to check the picture and sound of the unit, evaluating various criteria.



This analysis goes through numerous phases in co-operation with the Japanese “Picture Meister”, in order to arrive at a point at which the TV is approved for general release. Within this process, specific committee members are dedicated to ensuring colour balance, measuring such things as white balance and luminance. To do this, they use measuring equipment that is regularly calibrated. Dozens of people are directly involved in the approval process of each new screen. One of the most important factors measured is that of “reality” of the picture. While colour temperature, brightness, luminance and so on are measured, the “natural” colours of a picture are all-important to the screen’s approval.

Next Generation: So what’s the next keyword? While HDTV is currently the buzz word throughout Europe, the next key word will be “Wide Colour”... this basically refers to wide colour gamut, meaning the entire visual world, from image capture through storage and editing right up to diffusion, will have wide colour gamut... Remember, this doesn’t mean brighter colours... it means TRUER colours.

Ipsos Research Project Sponsored by Sony

People Want Quality... But They're Confused!

It's one thing to talk about people being confused - finding it hard to understand new TV technologies and what they mean; but it's another thing to analyse how and why they're confused. To our knowledge, until recently no-one had attempted to quantify this dilemma.

In October 2005 however, Sony TV Operations Europe commissioned a survey by Ipsos' global omnibus services, who interviewed more than 5,000 potential buyers, ascertaining just how lost they are when it comes to buying an LCD HD-Ready TV.

More than 1,000 people aged 14 and over were interviewed by telephone in each of the following markets: UK, France, Germany, Italy and Spain. We have selected a few of the survey results for publication in this report.

"I know a lot about LCD TVs and would be happy to offer someone advice on which one to buy..."

The highest number of people agreeing that they knew a lot about LCD TV's was to be found in France, with a score of 23%. Surprisingly, the lowest number agreeing they knew a lot about LCD TV's was in "hi-tech" Germany.

In the UK, the result was similar - 19%, Italy a high 22% and Spain 21%. The result shows that our preconceived ideas about higher market sophistication in Germany and the UK may be a little off kilter.

"I don't even know what LCD TV means and would find buying one very confusing"

Very interestingly, a huge majority of those questioned in the UK agreed with this (86%), while at the opposite end of the spectrum, in France less than half agreed (45%).

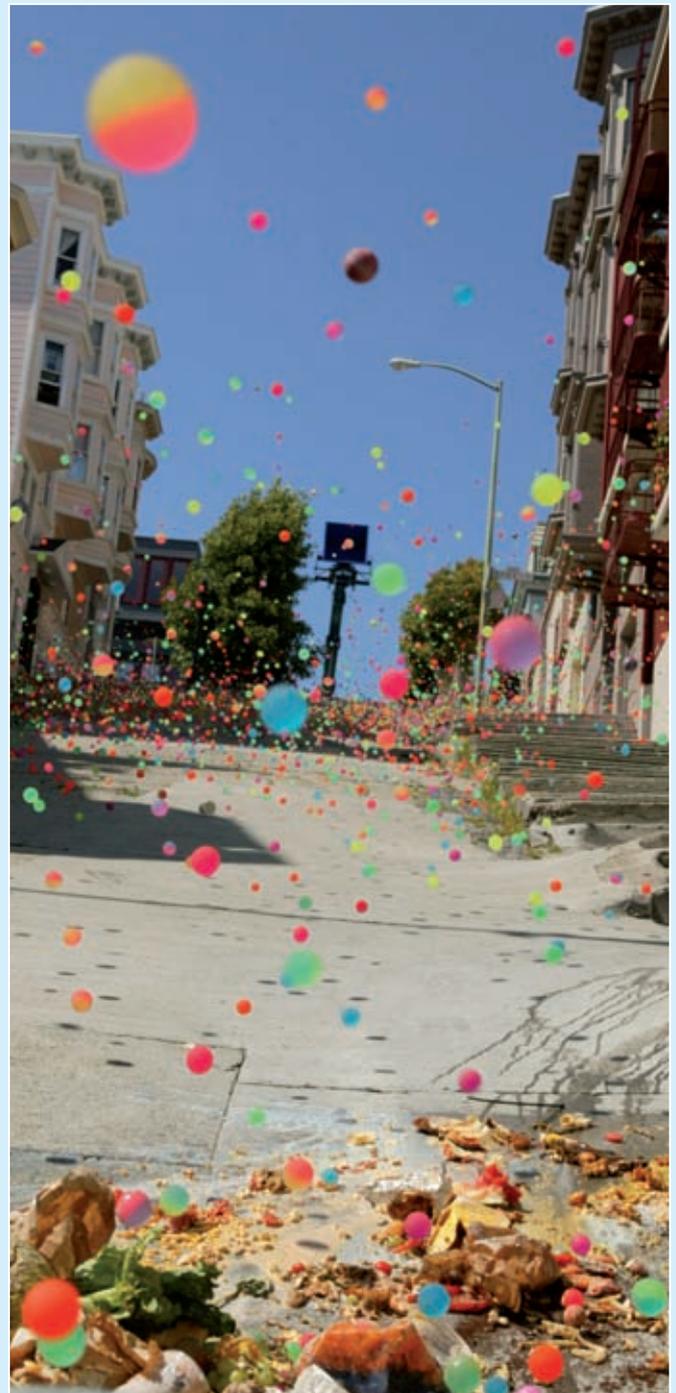
In other countries, results were between 50 and 60 percent - Germany - 53%, Italy - 55%, Spain - 56%. So what does this mean? A huge amount of work has to be done to begin with, just to explain what an LCD TV is in the UK market. This is still nevertheless the case in other zones as it has to be said that only 55% awareness of what an LCD TV is in France is pretty dismal.

"There is a new type of TV in the shops known as 'HD-Ready'"

To this postulation, the best educated public was in Germany, where one in three were aware of HD Ready TV. In the UK and France, around one in four (24% and 26% respectively) were aware, while in Italy and Spain, just over one in ten were aware (14% and 11% respectively). This result is underpinned by the fact of course that the first HD transmissions were available in the

German market, while France and the UK are also launching into HD now.

Full details of the Ipsos' global omnibus services survey may be obtained by contacting Sony Marketing Europe.



A Word from One of the World's Top Display Analysts

Fear and Confusion on the Shop Floor

It is true that when one talks with friends or listens to innocent questions asked in retail stores, it becomes evident that people want quality but don't know quite how to look for it. To get to the heart of this problem, we spoke to one of the top experts in LCD research worldwide - Ross Young, President of US-based DisplaySearch...

Do you think it's fair to say that while image quality is important, by the same token people don't know how to gauge how good an image is?

Ross Young: People don't know the right questions to ask. They definitely need more education. This is probably because the different technologies use different definitions to describe the same things. Viewing angle in plasma has a very different connotation than in LCDs. Contrast is another point of confusion. The plasma and LCD industries use different definitions to describe contrast. Plasma uses darkroom conditions, and they use a 1% window for defining contrast. They call it "peak brightness". People are faced with buying plasma or LCD TVs with different ways of specifying performance and that leads to a lot of confusion. Plasma contrast may be cited at 3,000:1 or even 10,000:1 while LCD may be at 1,000:1... yet when we measure them, the LCD has a better contrast ratio in a normally lit room!

Do you think people are really concerned about the quality of the colour on their TVs?

People want colour to be an accurate representation of what they themselves see. If they have a picture of their child's face, and they find that the screen doesn't represent what they see, then they become dissatisfied. A great amount of work has to be done and it's great that Sony is trying to take a leadership role there.

You have seen a lot of LCD plants in Asia. When you go into a store and are told by a salesman that all LCD panels are basically the same, how do you react to that?

All the plants are somewhat unique in that they have their own specific processes customised to their company. They use different colour filters, different liquid crystal material, different polarisers and so on. And in terms of performance, you have many different grades of panels - you have Super A grade, A grade, B grade, C grade, D grade and so on. We understand that Sony are using the very highest grade panels, so there is differentiation among all the finished products out there.

Sony is now actively involved in LCD production, and I know you are probably the only top-level analyst to have visited the S-LCD plant. What were your impressions?



It's currently the world's largest flat-panel factory in terms of having the largest substrate size, and is also one of the world's largest in terms of total output. It can produce eight 40-inch panels at a time, which no one else can do today. The S-LCD factory is therefore a real boon in helping Sony develop and enable the 40" TV market segment.



ROSS YOUNG

President & CEO
DISPLAYSEARCH

Ross Young is founder and President and CEO of DisplaySearch. Prior to founding DisplaySearch, he served in senior marketing positions at OWL Displays, Brooks Automation, Fusion Semiconductor and GCA. He also consulted to SEMATECH and numerous semiconductor and flat panel-related manufacturers. Ross has been a speaker at countless conferences around the world and has been quoted in numerous publications including Business Week, Forbes, Fortune, New York Times, USA Today, and Wall Street Journal. He attended the University of California at San Diego (UCSD), Australia's University of New South Wales, UCSD's Graduate School of International Relations and Pacific Studies, and Japan's Tohoku University.

www.displaysearch.com

European Field research

How Consumers Perceive TV Quality

When judging picture quality, Sony doesn't just rely on gut feeling or instinct. End users are regularly consulted in qualitative research programmes in order to better understand what they expect or look for when buying a new TV. In December 2004, Sony commissioned a qualitative exploration of consumer perceptions of picture and sound quality in Berlin, London, Paris and Barcelona. We spoke to Glyn Evans – Manager – Market Intelligence Europe about this latest research project...

Tell us about the background to this research.

Glyn Evans: While Sony has for many years been synonymous with total quality in pictures and sound in TV, home theatre and audio products, we felt there was a need to establish just what the term 'Best sound'/'Best picture' really means to consumers and how they themselves perceive it.

The objective of the research was: "Establishing how consumers imagine best picture quality, sound and overall viewing experience and then studying responses when shown various TV's"... also,

"How consumers evaluate picture quality, sound and overall viewing experience of Sony vs. other brands in a real life setting". In this context it was important to understand how consumers describe and experience "best picture and sound quality" (descriptors, words and impressions), what drives perceptions of best picture and sound quality (e.g. resolution, contrast, clarity etc.) and how best picture and sound quality are experienced and described in real life.

This research was qualitative, so you were using small groups. How were they divided up?

We commissioned field interviews with 6 mini-groups of 4-5 people, all looking to buy flat screen TV's and generally interested in Home Cinema.

When respondents were asked to explain what was important for them when it came to image quality, what were the main kinds of comments?

Especially when it comes to colour, people say they want something that looks real, not a picture where the colours are on the one hand washed-out, or on the other, over-bright. People say they do not want "synthetic" looking colours. A few quotations included:

"...Just like looking out of a window. – Opening it, you would probably feel the rain falling and feel the humidity on your skin..."
"...Sitting in the middle of the picture – Being part of an experience..."
"...The image is as the director wanted it to be..."
"...Flicker free, stable, sharp..."
and "...Film-like..."

What did you find were some of the main issues that have to be faced when it comes to consumers choosing "new tech" TV's?

People find it very hard to express themselves when explaining what they are looking for in terms of picture quality. It is clear there is a lack of real consumer language when it comes to picture and sound, with consumers only being able to repeat a generic vocabulary that they have learned from manufacturers over the years, and with the words being used often not being very rich in their meaning. Also, overall settings at the Point of Sale may challenge (or even prevent from) a particular purchase.

The dilemma is that although not able to agree upon a clear formula to define best picture settings, the perception of picture at the store is crucial for final decision making. In other words, while TV's are lined-up side by side, it depends how they are individually set-up as to how they will be compared to one another.



GLYN EVANS

Manager
SONY MARKET INTELLIGENCE
EUROPE

Glyn Evans joined Sony and the market intelligence team then based in the European Corporate headquarters in Berlin 5 years ago. After a stint in Amsterdam, he now works for the Communications department in Weybridge. He is primarily responsible for all product and market information related support for the product marketing business groups.

The Science of Colour Psychology

How Colour Affects People

When light strikes the eye, the different wavelengths do so at slightly different angles and in different ways, and in the retina they're converted into electrical impulses that pass eventually to the hypothalamus, the part of the brain which governs our hormones and endocrine system. The result is the stimulation of physiological reactions which in turn, become psychological responses. It is for this reason that when colours are faithfully reproduced on a TV screen, and only then, a person watching that picture can feel truly "comfortable". The team from @radical.media in New York asked the renowned colour psychologist Angela Wright to explain how the brain reacts to colours...

How does colour psychology work?

Angela Wright: Although we are unaware of it, our eyes and our bodies are constantly adapting to these wavelengths of light. In my research over the past 30 years, I've found a number of misconceptions about colour. The first one is the assumption that it's purely a visual phenomenon.

Colour is energy and the fact that it has a physical effect on us has been proved time and again in experiments - most notably when blind people were asked to identify colours with their fingertips and were all able to do so easily. Colour has contributed to our survival throughout evolution. Learning if something that we're thinking of eating is likely to poison us, we get that information from the colour, or if a creature coming towards us is likely to attack us. If it's black and yellow, it probably will. We orient ourselves with colour, but all of this is happening on a largely unconscious level. When you look at a colour, without actually realising it, the colour is sending energy towards you which is affecting you.

What is the difference between natural and artificial colour?

Ever since Adam was a lad, humanity has been trying to echo and recreate the matchless harmonies that nature just does. I'm not entirely sure that we've succeeded yet, but when it comes to colour reproduction it gets quite complicated. Take the case of designing on the computer, which of course everybody does now.

The colours used in their design on the screen are the primary colours, red, green and blue - known as RGB - but printers use the four printing colours: cyan, magenta, yellow and black (CMYK). There's all sorts of adjustments that have to go on, between the different ways that humanity has tried to control and reproduce colour. What people mean when they talk about natural colour is, in fact, what they have observed in the natural world.

How important do you think it is that colours on a TV screen be "real", when it comes to people's subconscious interpretation of the picture?

I would suggest it's very important, because if they're distorted in any way... if they're not very real, or they're different, this throws us on an unconscious level.

Our reaction to colour is 80% unconscious, and that's very, very powerful. It determines our behaviour. We use it to orient ourselves and to make judgements about anything that confronts us. If colours are unreal or "out" in any way, it also distorts the message and confuses us.

Do you think this fact is sufficiently taken into account by people in the TV business?

I think the technical challenge of achieving that is huge. It's the same in any area where you're trying to reproduce colour, like printing. It's a lot more than a matter of mere appearance. The short answer is I don't think people do take account of it. I don't think they take enough account of the psychological effects of colour.

(Our thanks to @radical.media for this material)



ANGELA WRIGHT F.R.S.A.

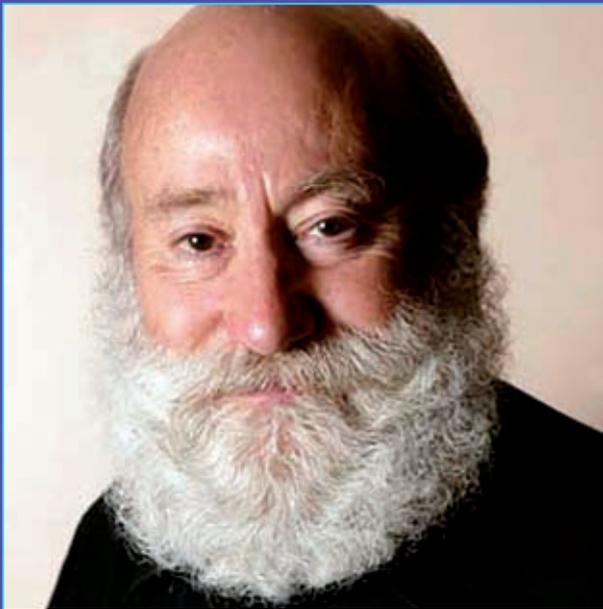
Founder and President
COLOUR AFFECTS

Angela Wright studied unconscious thought processes at Queen Mary's Hospital, Roehampton, England but was frustrated by the fact that colour is a little explored area of psychology. It was after studying the dynamics of colour harmony in Carmel, California, USA, that she was able to formulate a clear hypothesis that identified links between patterns of colour and patterns of human behaviour, developing an academically sound and demonstrably effective system that crossed cultural boundaries and, for the first time, enabled colour psychology to be applied objectively, rationally and with remarkable accuracy. Her work has been studied and validated by experts in the fields of both psychology and colour physics. She also appears regularly on TV, the radio and in the press.

The Eye of the Creator...

“I’m furious when the colour isn’t right on the screen”

Colours reproduced on a TV screen are important not only for the person watching them, but also for the people who created the images and those who are indeed on the screen as actors or presenters. A “quality activist”, present at the Cannes Film Festival every year now for decades, the Human Rights Award winner - Film Producer David Hannay - is well placed to comment about the importance of “getting it right” on the TV screen...



DAVID HANNAY

President
HANNAY FILM PRODUCTIONS

The 1988 Human Rights Australia Film Award recipient*, David Hannay, is one of Australia’s most experienced film and television producers. Since 1967 as producer and executive he has been involved in the development, production and marketing of more than fifty film and television productions. He has worked with thirteen directors on their first feature films and as many first time writers and producers. In 1996 he received a Lifetime Achievement Award from the Producers and Directors Guild of Australia. He was also named Film Pioneer of the year by the Society of Australian Cinema Pioneers ‘for outstanding service to the Motion Picture Industry’. At the Screen Producers Association of Australia’s Independent Producer Awards in 2002 he was the inaugural recipient of the Maura Fay Award for service to the industry.

* For South African based Mapantsula – described on the Internet Movie Database as “...one of the best movies about the struggle against oppression ever made...”

From the point of view of someone who has produced countless feature films, just how important is it for the colours to be correct when the film is re-run on TV?

David Hannay: It’s absolutely critical, and I’m the right person to talk to about this because it’s been a bugbear of mine ever since I’ve been in the business. Light and colour is what creates the mood of the film. Make-up and the way faces are lit, as well as costume design, are also essential in creating that mood. Down the path, when the film is going to be broadcast on television, it’s absolutely vital that what you have created, when you were making the film, which is essential to the atmosphere of the film, is replicated on television. It’s no different to looking at a Michelangelo. I’m drawing a long bow here I know, but when he painted the fresco in the Sistine Chapel, he used certain colours that were essential in creating the mood he wanted to produce to strike awe among the parishioners... to move them as they looked up at the ceiling. It was the atmosphere that the Pope had wanted him to create ... not just a picture ... a feeling created by the use of colours. That is no different a view from what I have when I want a camera-man, a costume designer and a make-up artist to come together to give the right feeling and right mood for your audience. And if you don’t give them that, you’re not giving them the experience you intended them to have.

I imagine for the actors that if the skin tones and make-up colours are not faithfully reproduced, they would also be very unhappy...

I have seen actors, particularly women, be devastated at the presentation of something in which they remembered they looked brilliant when they saw the rushes... and brilliant when they went to the premiere... looking at their image on the small screen and saying, “yuck, did I look that bad? No!!”

... And with the onset of new technology flat screens, the colour has often not been up to the same standard as on Cathode Ray Tube screens...

That’s true. I constantly go into stores that are playing video images on their LCD and Plasma TVs, and look at how all the images are tracking. What I do see today is that the quality of what is being sold is improving markedly. I am really happy to say that. I have been, going way back to the 70’s, a Sony man. I’ve always had Sony Trinitron, Sony Profeel, and so on, because I wanted to get the best image for myself. Every day, I still go and watch my Sony. One could even say I’m an absolutely maniacal Sony fan. The reason for that is that generally speaking I consider that Sony delivers as good a quality as you can get. That’s not an advertisement, that’s a fact. I have not had any other screen in my life for 30 years other than a Sony, both at home and in the office! I’m always concerned about the quality of the technology and I do believe that the new big screens are coming of age. I’ve recently seen some great home theatre systems that represent the original intention of we film makers very well... but of course there are plenty that don’t.

When Colour Means Everything to the Client

Sporting Colours

As one of the biggest producers of motor sports programmes globally, and TV production house for some of the top brands in the world – including Ferrari – SAMIPA, based in Monte Carlo, are known above all for the exceptional quality of their work. Founder and President of the company, Jo Deraco explains that colour on TV means more than just getting it “aesthetically” right...



SAMIPA is primarily equipped with Sony equipment. What are your thoughts about Sony and its quest to obtain “colour like no other” with their BRAVIA flat TV line?

Of course, in TV production, Sony is one of the biggest names around. We know Sony make the best TV cameras on the market, but they also make everything else that completes the image chain, which is why we mainly use Sony equipment. From the camera, right to the TV on which people watch the images, Sony has developed excellent products in order to ensure the best end result possible. That in-depth understanding of image capture, diffusion and viewing goes a long way to explaining their competency in the field.



JO DERACO

President – SAMIPA

Jo Deraco began his professional career as a race technician. In 1977, he created a programme on Télé Monte Carlo with the aim of bringing together his two passions – car racing and TV. He created SAMIPA (Société Anonyme Monégasque d’Images et Production Audiovisuelles) shortly thereafter, primarily covering Formula One and the World Rally Championships. SAMIPA has since become a major force in motor sports TV production world-wide, opening the Russian market to F1 TV in 1990, and for many years producing Formula One programmes for Eurosport and TF1. For around ten years, it has also been responsible for TV images for Ferrari among many others. With the recent death of Monaco’s Sovereign Prince, Rainier III, SAMIPA was chosen for all TV coverage of events connected with the accession of Prince Albert II, including management of live coverage of events (up to 22 cameras) in HDTV.

©Photo: J.P. Cordi

We noted that SAMIPA was recently at the Ferrari World Finals in Mugello, Italy. For a company like Ferrari, one might imagine that getting colour right must be very important...

Jo Deraco: With Ferrari, it’s a question of getting the red just right. Ferrari Red is virtually a brand in itself, so it is incredibly important that the red be retransmitted as faithfully as possible. Once you get the red right, one should then not forget the sponsors’ inscriptions on the cars, around the track and on the drivers’ suits. And here, a lot of work is done even before we start taping, to see how the colours marry together... a red, yellow and black, or blue and yellow, will pass better than a lot of other colours. You’ll notice that the importance of the colours of the cars becomes essential when they’re shown on TV.

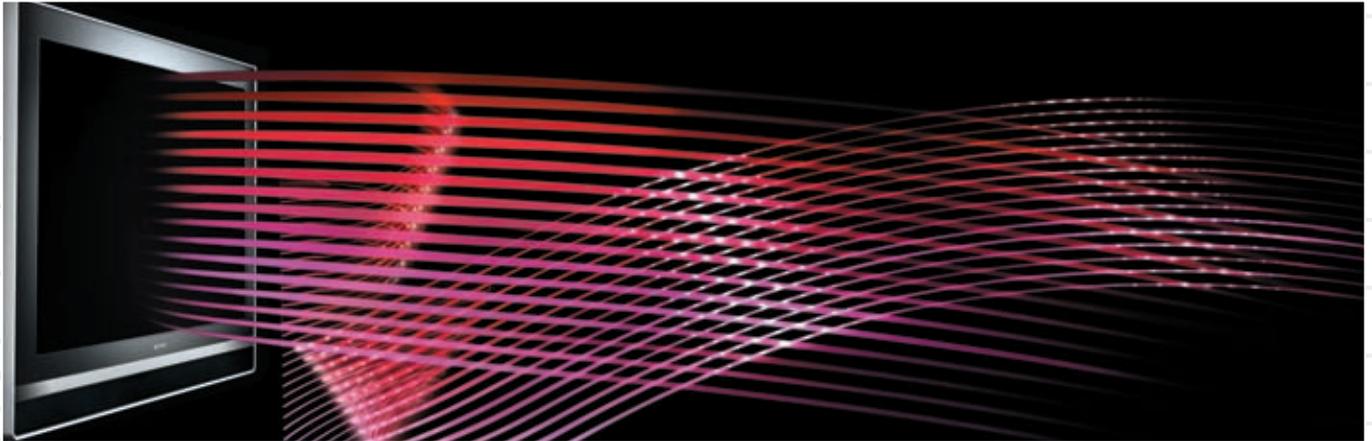
At the Ferrari finals, you had 17 cameras around the track. How are they set when it comes to colour?

The quality of the head vision engineer is extraordinarily important here. He has to have a perfect balance between all the cameras so as not to have faults or variations from one camera to another. When the director passes from camera eight to camera nine and then to camera ten, there should be no colour variations. The colour must be identical.

We’re talking about image gathering... but one must also avoid weak links in the rest of the image chain...

One should understand that between the professional taping of an image and the arrival of that picture on someone’s TV screen at home, the signal loses around 50% of its quality. You can imagine that if the initial quality of the image and the colour are insufficient, the end result will be disappointing.

Sony's Colour Philosophy ... a Culture Like No Other



The mere fact of chirping from the rooftops that Sony has “Colour Like No Other” is not going to turn many heads unless the claim can be rightfully justified. The latest TV advert by Sony, showing hundreds of thousands of bouncing balls plummeting down the precipitous streets of San Francisco, is aimed at awakening people to the importance of colour on TV... something which is ingrained in Sony's TV culture. We asked Andreas Ditter, Director, TV Marketing Europe, to give us the background to the story.

Why is colour so important to Sony?

Andreas Ditter: Because colour is one of the key items that make a good picture... maybe the most important one. I'll give you an example. If you have a glass of a very nice Petrus red wine and a glass from a two litre bottle of Valpolicella, you take a look at both and you will notice a difference in colour. The question is, can you reproduce such colours on a TV screen or not? If you can't, then one will “taste” like the other one, but if you can then it shows that you have exactly the same reproduction of the colour as you have in real life. That's what makes the difference. The colour gamut that is reproduced today is quite narrow and is not giving the full life experience.

So this is why Sony has been putting so much effort into developing tools and means to reproduce colour?

Yes. Our aim is to reproduce colours in the best natural and realistic way. We're not talking about artificial enhancement. We're just talking about reproducing what you see in real life. Contrary to audio, colour is not a subjective impression. It can be measured and benchmarked.

You have colour depth meters and light colour meters as well as calibration instruments that can show you whether you are reproducing the type of colour in a part of your gamut that you wanted or not from the original source.

Do you believe Sony has an advantage over the competitors with respect to image?

In terms of picture quality, it's sure. Our picture quality is advanced compared to others. People may single-out aspects where we may not be superior, but the overall picture is definitely the best. We have many tests that prove that, it's quite easy. I can only

recommend comparing competitors' TVs with ours and you will see which one is the best. We do blind tests with people and what we find generally is that the overall picture impression is the best.

So back to the main theme, which is “Colour Like No Other”: tell us about the “bouncing coloured balls” TV advertisement that was filmed in San Francisco...

People will get the idea first of all that it's all about colour. When you look at advertising campaigns by other companies, everything is about the technology, and we get the feeling from all the studies



we've done that people don't care about the technology. What they want is to get a good picture and to have a nice TV in their home. It's not about how it's done, it's about the result. From this philosophy we tried to say... "OK, it's about colour"... colour is very important when you watch TV, and if you can emotionally attract people in this way, and get them into a store to look at the sets, that part of the job is done.

... So colour is important... but not bright colours so much as real colours?

We are all seeing multiple types of colour in our real life and the question was "What makes Sony TV's more special than the others?"... It's true that it's not about the multitude of colours you can see, it's how to reproduce those colours in the proper way. I'll give you another example... just like with the wine. A steak normally has around 40 grades of red, so how do you get a steak back on a TV with the 40 shades of red that make it look natural rather than artificial and plastic? That is the challenge.

How does Sony work towards "Colour Like No Other"?

There are a number of processes involved in order to do that. When a signal enters a TV set, it must be processed in a number of ways. First it has to be "cleaned up" to take the "video noise" out as much as possible. You have to separate the colours and contrast from one another. You need to anticipate what colours are coming at what stage, and when they are changing, by every frame.

There are six to nine steps involved in cleaning-up one single image frame, out of the 50 that you see each second that make the difference between an excellent picture and an average picture.

What does the future hold?

Sony plans to further widen the colour gamut. The limitations of colour gamut we currently see are a result of limitations that broadcasters have had with regard to broadcasting signal and data... related to the bandwidth they can use. With the dawn of the digital era, with satellite signals, HD etc., it no longer makes any sense to keep that colour gamut so narrow. In fact camcorders can already record a much wider colour gamut. TV's can already reproduce a much wider gamut as we showed with the Triluminous one, which can cover 105% of the NTSC colour palette, compared with only about 70% coverage for a standard fluorescent backlight. It's a shame that you won't see that in a normal TV broadcast. So we're advocating towards broadcasters – saying "embrace what our cameras can do, and try to find a new standard in order to get a better picture into people's homes." This will become especially important when HDTV broadcasts start happening.

So Sony is working on colour, not only on the TV's themselves, but in fact right throughout the industry...

Indeed. You know, our professional broadcast cameras can record a much broader gamut. But the TV people are post editing that down to the broadcasting format that has been decided by standardisation committees... and the TV could also do a better job. We're not blaming them. It's the standard that was established a long time ago. It just needs to be reviewed now.
(Eds: Sony is actively lobbying the European Broadcast Union to increase colour gamut standards for TV broadcasters).



ANDREAS DITTER

Director
SONY TV MARKETING EUROPE

Andreas Ditter graduated in 1992 from the University of Rheinland Pfalz, Germany, with a degree in Information Technology and Economics.

His work experience includes Notebook Business Unit Manager for Olivetti Personal Computers S.p.A. worldwide and heading the IT marketing division of Sony Europe, successfully launching VAIO Notebooks, PCs and Clie Handhelds.

With more than 10 years of experience in the IT industry Andreas Ditter joined the consumer electronics business inside Sony Corporation as TV Marketing Director in July 2003 to address the specific issues of a fast moving market transition between conventional and new Flat TV's. He is at the head of the European Marketing group responsible for CTV, Flat TV and Rear Projection TV.



Evaluation & Optimisation of TV Screens



Sony's evaluation process for new TV's is a gruelling task, incorporating numerous committees who assess and work towards the "perfection" of the image. This dedication to "getting it right" is what sets Sony apart in the field. To find out more about how Sony goes about this process, we spoke to Mark Londero, General Manager – Technical Planning for Sony TV Operations Europe...

How does Sony evaluate and optimise TV screens in terms of visual performance?

Mark Londero: It's not just about the brightness, or colour or contrast alone. We try to recreate the reality of the picture. To do this, we use a picture evaluation DVD that has certain kinds of contents that most customers would recognise as references to real life. These include a skin-tone comparison, in which we have images of several different people from different regions of the world - European, African and Asian. We can judge if the skin tone is good representation of a normal healthy person, and that's generally easy for most consumers to recognise. Other tests include the reality of vegetables, fruit, meat and fish. These again are typical references... Would you want to eat that particular piece of food? Does it look tasty? We all have that reference in our mind of what reality looks like.

How is that measured?

We watch TV for several hours!! And we are our own most severe critics.

As well as the model under test, we use samples of previous models to ensure consistency. When we are designing a particular range we always keep in mind which is the comparison model ... which is the one we want to better from previous years. There is also usually a competitor model in the line up, so we can see what a customer may see at the shop front.

In the evaluation committee there is always one nominated leader but there are several people who join the discussion to make sure we have a balance of opinions to create the optimum picture and sound quality.

Who is included in the committees?

A committee always includes the project leader for a particular model... then the head of our quality department and the head of the design section... and we do this kind of critical picture evaluation at each of the prototype stages of the design. Then there's a final one just before we sign off for mass-production. At the head of the committee is the "Picture Meister". That person is one of our senior engineers, who is nominated as the expert in

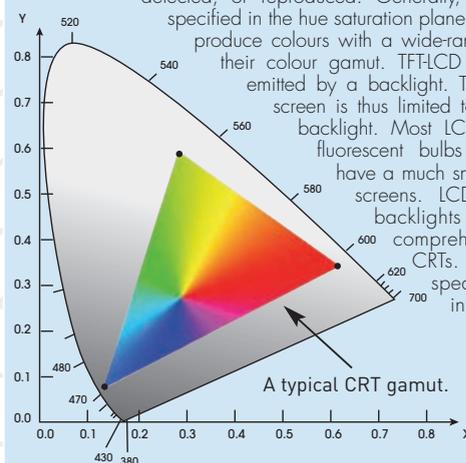
picture quality. That is not just for colour, it's also for sharpness, resolution, brightness levels – in fact everything that creates the most real picture is wrapped into the same picture evaluation. We don't judge the items independently, we view them as an overall balance.

From an engineering point of view, how difficult is it to reproduce real colours on LCD TV's?

I have to say it's quite difficult on the basis that we're trying to recreate real colours from a limited colour pallet. Limited in that its less than nature itself! It's particularly difficult with LCD because of the backlight, and that's why our next developments are very

What is Gamut?

Colour gamut is the subset of colours which can be accurately represented in a given circumstance, such as within a given colour space or by a certain output device. The gamut of a device or process is that portion of the visible colour space that can be represented, detected, or reproduced. Generally, the colour gamut is specified in the hue saturation plane, as many systems can produce colours with a wide-range of intensity within their colour gamut. TFTLCD arrays filter the light emitted by a backlight. The gamut of an LCD screen is thus limited to the spectrum of the backlight. Most LCD screens today use fluorescent bulbs for backlights, and have a much smaller gamut than CRT screens. LCD Screens with LED backlights yield a more comprehensive gamut than CRTs. Sony is currently spearheading research into the use of LED backlights for LCD screens.



important for wide colour gamut backlights, and the incorporation of different backlight technologies such as LED.

What are the most difficult colours to reproduce on an LCD TV screen?

Reds and greens are the most difficult to reproduce, and as skin tones are a combination of the two, it's quite difficult to get the balance right. And it's not just about the colour.

It's about the contrast level as well, which is quite challenging on LCD compared to CRT for example, and that's why the picture committee leader has to make the best judgement when it comes to creating a balance between all of those. So it isn't a pure colour judgement, it's all about getting the most real reproduction of those skin tones and the vegetables, meat and fruit textures. We want to make all the food look delicious, the same as you may see on a supermarket shelf.

Sony's new campaign is based around "Colour Like No Other". Why is this such an important part of the recipe?

It's because most people have, for some time, felt that the colour just looked wrong on flat panel TV's and we wanted to explain that Sony's investment in ensuring our colour response, as part of the overall picture, is optimal. We've seen that most people's perception of what the best picture is comes from the most realistic reproduction.

If Sony claims to have the best picture, that doesn't mean anything, but if we claim to have the "most realistic" picture, most people can appreciate that difference. And because of the way we work on the skin tone for example, almost everybody can recognise whether it looks real or not, because that's a natural reference each one of us has in real life. You would quickly recognise if a friend looked "off-colour".

Okay, so we're widening the colour gamut on TV's, but if the source doesn't have brilliant colours, that won't mean much. How important is it that the broadcasters start working on the colour gamut?

It's vital. There's already a movement in the European Broadcasting Union for the broadcasters to widen the colour range that they broadcast. Today, film and studio cameras apply an artificial filter to make sure the colour information they're sending is limited to match the range that receiver displays can reproduce. So even within the EBU there's now activity to try to widen that specification. That's partly in recognition of Sony's plans for example to install LED backlights in LCD screens, which will greatly enhance colour gamut.

So Sony is active in pushing the standards forward?

Very much so. With Sony's already existing competencies in studio and broadcast equipment we really understand how colour and pictures can be optimally captured, and this expertise follows through the chain to deliver the most realistic experience at the home.

Our aim is to improve the entire image chain so that the viewer can obtain the truest colours possible.

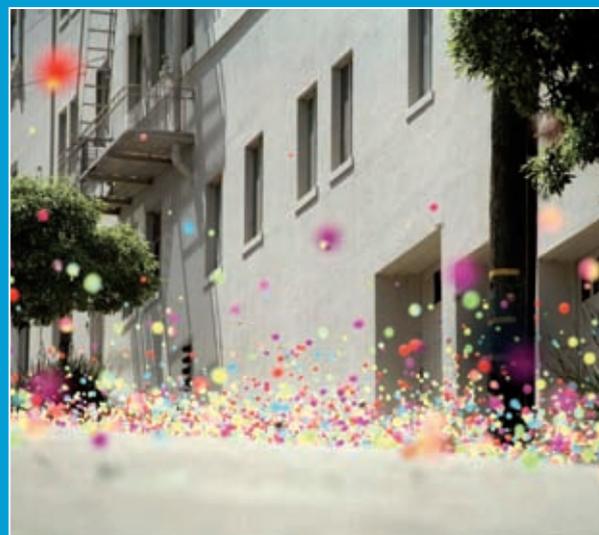


MARK LONDERO

General Manager
Technical Planning
SONY TV OPERATIONS EUROPE

Mark Londero is the Technical Planning manager for Sony TV Operations Europe. He has worked for Sony since 1982, spending 3 years in Japan working on the design of Sony's first widescreen TV set, and is now based in the European TV headquarters in Weybridge, UK.

He has been responsible for the market and product development activities for one of the worlds first integrated digital TV sets.



A Word from a European Specialist Analyst

Looking for Mr GoodSet

Having read much of the material in previous pages, we can understand that on the one hand it is important for those buying new-tech flat screen TV's to be better educated – so that they may better understand what to look for when shopping; and on the other hand, those selling the sets must work on making things more straightforward and clear when assisting in the purchasing process. On this page, Bob Raikes, a renowned European analyst specialising in display technologies, gives his point of view as to how to find “the right set” ...



BOB RAIKES

Managing Director
MEKO LTD

Bob Raikes is an experienced sales and marketing specialist in the PC industry since 1982. After seven years with Eizo, as Managing Director of the UK subsidiary, he established Meko Ltd in 1994. Managing Editor of Display Monitor, he is a regular contributor to various computer and electronic publications. He speaks regularly at conferences and trade events.

Meko is the largest, longest established and most successful specialist monitor market research company in Europe. As well as monitors, the company now offers research on the European Advanced TV Market. Meko is the European partner of DisplaySearch.

www.meko.co.uk

How does the content affect the choice?

Bob Raikes: The best set for watching movies may not be the best for watching sports. Movies are often very dark, but sports may be shot in bright sunlight and can be very bright. Different technologies have different strengths with different content. LCDs are good for showing games and other ‘computer style’ output as they can maintain a high level of brightness over the whole screen.

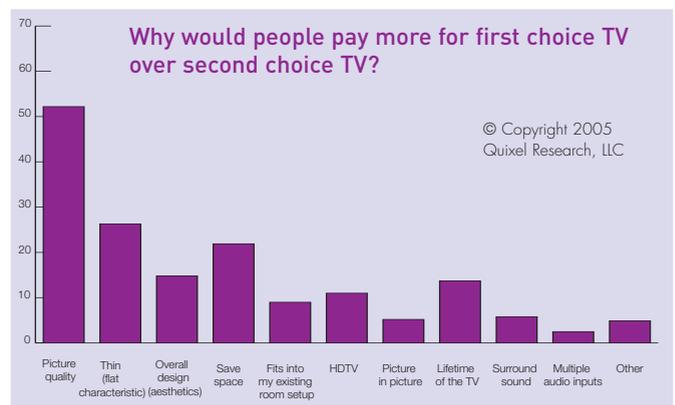
There are still a lot of viewers that assume that a good display will look great even when the signals it's trying to display are poor, but poor quality content can also make a display look very bad. In fact, the better the LCD, the more likely it is to show up a poor signal – just as really good hi-fi needs a good source. When evaluating sets, it's critical to use a known good source. Equally, when demonstrating a set, a good crisp source of video can make the world of difference. The ‘Video Essentials’ DVD series from Joe Kane are favourites of mine.

How does the environment affect the picture?

LCDs are much less affected by glare and bright ambient lighting than traditional CRTs and other displays. That means that they can be viewed in quite bright circumstances where other technologies might struggle. When reviewing sets, ambient lighting needs to be equalised for all the sets being watched. In the past, I have seen magazine reviewers that didn't understand this and viewed half the sets facing a window with half facing away! This really doesn't make sense for a level playing field.

Any other tips?

The main one is to use a reference system and reference content that you know and trust to compare with the set under test. Human visual memory is incredibly short and anything other than side by side testing with a known set tells you very little about the quality of what you are looking at.



Point of View

by Gérard Lefebvre

When it comes to LCD-TV, while the market is growing exponentially, the contention of many market analysts and professionals is that buyers are extremely confused. This argument has been reinforced by the in-depth Ipsos research project sponsored by Sony, which covered five separate geographic zones in Europe and underlined not only the point to which people are at a loss in terms of understanding LCD TV and HDTV, it also showed wide divergence between these zones in terms of its findings.

These Ipsos survey results are very important for several reasons. Firstly, they have shown that one observation by market pundits is right - that buyers and indeed resellers needed to be better educated and informed in order to be able to differentiate products through deeper understanding of new technologies, enhanced demonstration techniques and wiser observation.



Gérard Lefebvre
President & Founder - CLEVERDIS

Secondly however, they show that the "conventional wisdom" – preconceived ideas about higher customer sophistication in markets such as Germany and the UK compared to those of Italy and Spain, is totally off-kilter.

The result is that for the first time, efforts in marketing and education in these different zones can be based on facts and figures rather than hearsay. In other words, it is essential that major manufacturers invest not only in product development and marketing, but also in the education of the market. To this end, Sony has come to the fore.

As our mission at Cleverdis is that of educating the market, we are very pleased to have been chosen by Sony Europe to support them in this effort. We sincerely hope their labours will bear fruit, and will help to further re-ignite consumer confidence in the sector.

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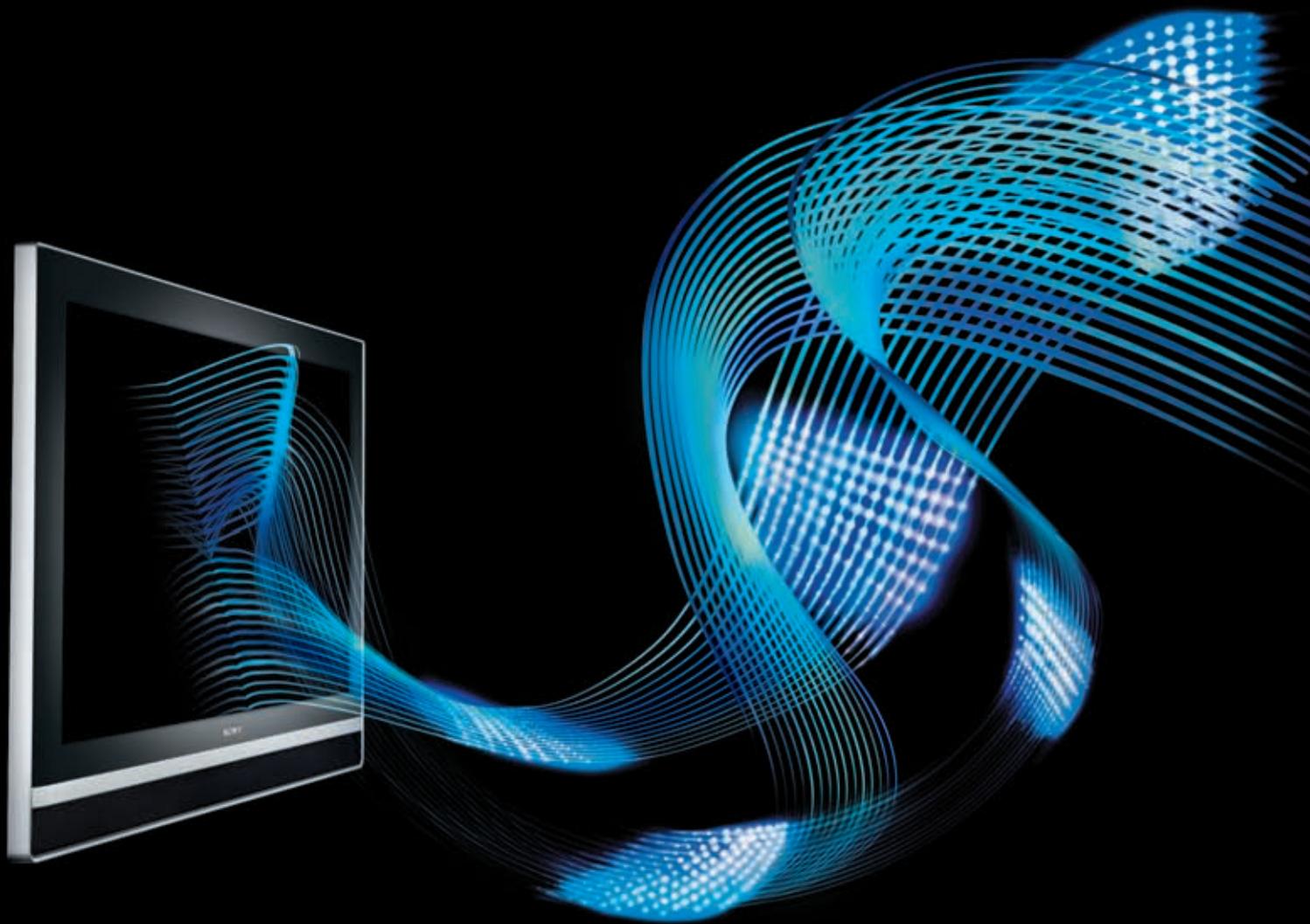
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SONY



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