

WHAT'S NEXT

VOLUME 1, NO.2

MAKING ADVERTISING MORE OF A SCIENCE THAN AN ART

BY JOE WILLKE AND BLAKE BURRUS

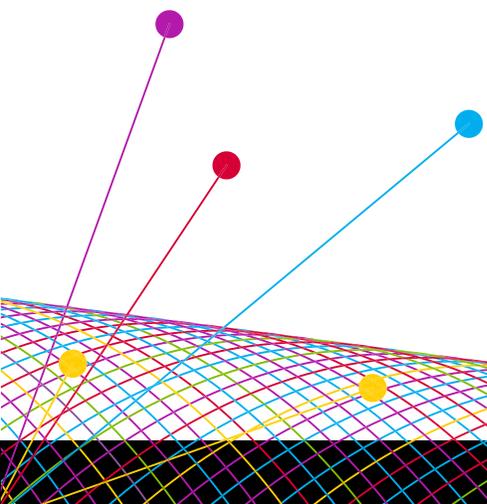
We've always known a significant part of advertising spend is wasted. Now, neuroscience can identify the exact moments in an ad that activate memory, draw attention, or prompt an emotional response, and determine on a second-by-second basis which parts are and are not effective in engaging viewers. By including only the most effective elements in your ads, significant savings can be realized from shortening their length while also maintaining or improving their overall impact. This process can benefit publishers and agencies, too.

Advertising has been a marriage of art and science at least since Raymond Rubicam of Y&R said about 80 years ago that every advertiser should “try to know more than your competitors do about the market, and put that knowledge into the hands of writers and artists with imagination and broad human sympathies.”

Things have not always been so balanced. Indeed, Mark Tungate observed in *Adland* in 2007 that “the history of advertising... is this constant tug of war between two schools: the creatives, who believe art inspires consumers to buy; and the pragmatists, who sell based on facts and come armed with reams of research.”¹ Most famously, the ground shifted dramatically toward the creative side in the 1950s, when the industry took on the glamor portrayed in the TV series *Mad Men*.

That revolution was sparked by Bill Bernbach of Doyle Dane Bernbach. Unable to persuade his bosses that “Advertising is fundamentally

¹ This and all other quotations in this paper are from the Kindle edition of Mark Tungate, *Adland*, London: Kogan Page, 2007, to which this discussion of the history of advertising is deeply indebted.



persuasion and persuasion happens to be not a science, but an art,” he set up his own shop in 1949. A decade or so later, the creative revolution crossed the Atlantic to Britain, where Collett Dickenson Pearce & Partners taught viewers that Fiat cars were “hand built by robots” and that Heineken “refreshes the parts other beers cannot reach”— catch-phrases never forgotten by those who grew up with them. Then Britain returned the compliment by inventing planning and exporting it back to America in the 1980s. In 1982, the English agency Chiat/Day became the first to introduce account planning to the US industry.

Throughout, whether the yin of planning or the yang of creativity was up, advertising agencies were inhabited by two distinct breeds: creatives like Leo Burnett, and pragmatists like Rosser Reeves, who asked, “Do you want fine writing? Do you want masterpieces? Or do you want to see the goddamned sales curve start moving up?”

What remained unresolved throughout wasn’t just whether research trumps creative instinct or vice versa, but *what kind of advertising appeals to people’s emotions in a way that motivates their purchase behavior*. The recipe for a good ad remained a mystery.

Today, the pragmatists have worked out a new way to address that mystery: the application of neuroscience to advertising. After years of effort and some false starts, a new era of precision is beginning. A neuroscientific process has now been developed that can determine on a second-by-second basis, free of the filters that bias surveys and traditional assessment tools, what parts of an ad are most effective. Further, by showing the ad’s creators what its most effective elements are, the process marks an enormous advance on the thumbs-up-or-down of traditional copy-testing, and may well transform the age-old tug of war between pragmatists and creatives into a collaboration.

Advertising has always spoken to both the product and emotional benefits of a brand, and a considerable body of research has been developed to provide a very detailed understanding of how consumers view product benefits. But we have been limited in our ability to develop a similarly rich understanding of consumers' emotional responses to a brand's advertising – until now. Consumer neuroscience is now allowing us to add more precise measures of emotional engagement to our current gauges of advertising effectiveness.

The most immediate practical result is that the compression of a 30-second ad to 20, 15 or even 10 seconds, traditionally executed by judgment, can now be guided by consumer neuroscience in a way that maintains, or in many cases increases, the ad's impact. (A 30-second ad for a manufacturer or retailer is typically shortened to 15 seconds. A promotion for a program might be compressed to 20 or even 10 seconds.)

Ad compression is only one application of neuroscience, but it is one that offers considerable rewards to all. By determining what parts of an ad are most neurologically effective, advertisers can create enormous financial flexibility by compressing their ads. They can increase the reach, frequency and impact of their advertising campaigns for the same level of spending, or spend significantly less with no loss of sales. Publishers, who advertise their own shows extensively, can gain, at no cost, additional inventory to sell, or advertise more of their own shows without reducing the supply they can sell externally. And agencies have a new tool to use in creating the most productive advertising for their clients. In a worldwide video advertising industry worth hundreds of billions of dollars, the potential is immense.

WE HAVE BEEN LIMITED IN OUR
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PUTTING THE CONSUMER IN CONSUMER NEUROSCIENCE

Neuroscience research has exploded over the last 40 years, with a correspondingly enormous impact on our understanding of a whole range of behavior.² It has already transformed the core research methods of many academic disciplines because it answers previously intractable questions. Advertising represents one of the newest areas to which it has been applied.

Historically, neuroscientific research has focused on seven neural processes: attention, memory, emotional processing, motor control, decision-making and response monitoring, human social interaction, and emotional regulation. Its methods may be divided into those that measure brain function directly and those that measure it indirectly (by monitoring motor responses controlled by the brain). Direct measurement methods include electroencephalography (EEG), magnetoencephalography (MEG), functional magnetic resonance imaging (fMRI), optical imaging, positron emission tomography (PET scanning), transcranial magnetic stimulation (TMS), and direct brain recording or electrocorticography (ECoG). Indirect measurement methods include simple button-press (reaction time), eye tracking, facial motor responses, and involuntary processes such as heart rate, galvanic skin response, and pupil dilation.

Not every application of neuroscience has met with commercial success. fMRI was a big scientific step forward. But it was and remains very expensive and it measures not brain response but cerebral blood flow – a phenomenon that follows by as much as six seconds the response that triggered it. Biometrics such as galvanic skin response and heart rate measurement, both also in common use, are similarly limited in their effectiveness by non-uniform degrees of time-lag.

The technique that represents both a scientific and economic breakthrough grew out of work that started at the University of California, Berkeley in 2006 under the leadership of Dr. Robert T. Knight, M.D., Evan Rauch Professor of Neuroscience. He and his colleagues Dr. Ram Gurumorthy and Dr. Ananth Pradeep determined how to use EEG to identify and capture responses to brain stimuli in milliseconds. Their approach consisted of two fundamental elements: deriving metrics for consumer neuroscience applications from an extensive publication record going back to the 1970s, and applying rigorous

² Indeed, President Obama and the National Institutes of Health have recently announced the Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative and the Brain Activity Map, with a complete understanding of the human brain as the goal. This decade-long initiative will have profound effects on understanding the human brain.

clinical standards to all EEG data recording. The result was the reliable measurement of brain activity with similar precision to fMRI and MEG but at a dramatically lower cost. As such, EEG became the first practical, affordable technique for measuring brain response.

HOW EEG WORKS

EEG provides detailed measures of both conscious processing and what lies “beneath” it. From the millions of pieces of information that bombard our senses, EEG can pick out three key metrics: whether a viewer’s *memory is being activated*, when and how far people’s *attention is engaged*, and whether the viewer is *drawn emotionally towards or leans away from* a stimulus. These three metrics can then be combined into an overall gauge of how effectively a viewer is being engaged.³

In order for EEG measurements to be used effectively in advertising, however, two more things had to happen. The first was the systematization of the clinical measurement process at a scale that could accommodate the needs of large companies in a timely as well as a cost-effective fashion. The second was the harnessing of computing capacity sufficient to analyze 18,000 data points per second, or over half a million in a typical 30-second ad. The operational capabilities of large companies solved the first problem; the arrival of Big Data solved the second.

Essentially, after years of effort, a university research technique has been successfully industrialized. Ads can now be tested in a way that minimizes “noise” in the data. The work is done by highly-trained lab technicians following strict protocols: for example, the screen must be of such-and-such a size, the chair positioned precisely on the floor exactly so many inches away, and the ad viewed three times to control for habituation and to allow for eye blinking and other autonomic responses that mask faint EEG signals. The early days during which consumer neuroscience was a matter of inspired start-ups strapping equipment to test subjects are largely over.

EEG CAN PICK OUT
THREE KEY METRICS:

WHETHER A VIEWER’S
MEMORY IS BEING
ACTIVATED

WHEN AND HOW FAR
PEOPLE’S ATTENTION IS
ENGAGED

WHETHER THE VIEWER
IS DRAWN EMOTIONALLY
TOWARDS OR LEANS AWAY
FROM A STIMULUS.

³ Although there is EEG research under way in the four other areas of neuroscientific activity mentioned above, these three measures together appear to be sufficient to the needs of today’s advertisers.

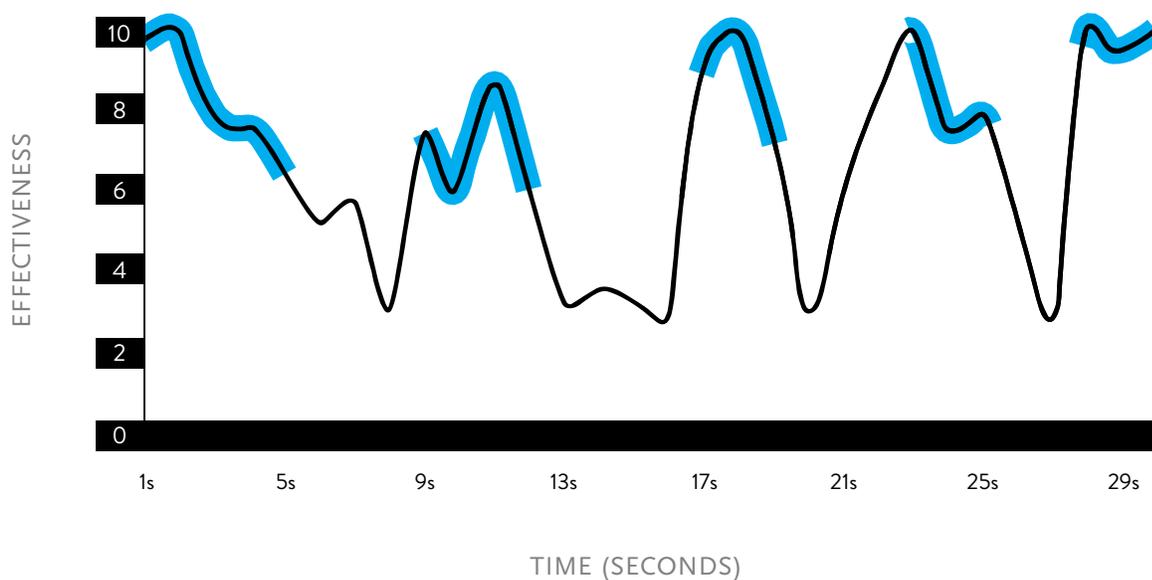
AD COMPRESSION

There is a significant difference between this scientific approach to ad compression and current industry practice. The latter involves shortening a 30-second ad by applying experience and personal judgment to trim the story line, reduce repetition, and so forth. Scientific ad compression is quite different. It begins by using EEG to track the three key dimensions of people's conscious and subconscious responses noted above on an almost continuous basis. What is their *attention* level at each moment? Are they *emotionally engaged* ("leaning forward" or "leaning back")? At what points are their *memory* centers being activated? To make the process practical, time segments of about one second are studied and scored.

Exhibit 1 shows what the balance of powerful and less powerful moments in a typical 30-second ad might look like on an EEG readout. The sections highlighted in blue are those pieces that should be used as the basis for the compressed 15-second version of this ad.

EEG READOUTS IDENTIFY MORE AND LESS EFFECTIVE PORTIONS OF ADS

EXHIBIT 1



Source: Nielsen NeuroFocus

With highlights and lowlights identified, a rough edit of between 10 and 14 seconds can be created (assuming the goal is a 15-second spot). Clients work with the scientists to ensure that key messages are not lost and that the storyline remains intact. The result is then returned to the creative team for coherence and smoothing as needed. The end product is a 15-second “scientifically compressed” ad that testing has shown to be as or more effective – at about 50% of the cost.⁴

This is a highly desirable outcome that can benefit all parties. The advertiser lowers its costs; the network gains inventory it can use to expand its advertiser base, and can further increase available capacity by compressing its promotions for its own shows;⁵ and the agencies’ creative team finally gets something they can work with from the pragmatists.⁶

But whatever the creative reaction, the scientific claim is a strong one. In 95% of cases, compressed ads appear to be comparable if not stronger in effect than full-length ones. Indeed, in over 70 side-by-side tests Nielsen conducted, compressed ads performed better than the original (Exhibit 2). The three fundamental measures of this are that emotional engagement and memory activation increased in response to the compressed ads, and less attention was required to process them – something ever more important as viewers’ attention is now often split between TV and other devices, in addition to traditional distractions.

And, as the following example demonstrates, the process works equally well on ads for TV programs as on ads for goods or services.

⁴ Generally, national media outlets -- broadcast and cable networks and syndicators -- charge 50 percent of a 30-second spot for a 15-second spot. Local stations generally try to charge 65 - 75 percent of a 30-second spot. And creative costs are actually higher for the shorter spot, as the process begins with a 30-second spot that must be shortened.

⁵ Networks are typically their own biggest advertising “client.”

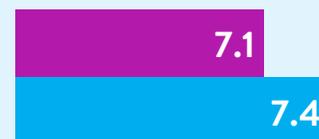
⁶ Quite independently of the contributions of neuroscience, running 15-second ads has actually become much more popular over the years. But marketing mix modeling suggests that pre-neuroscience compressed ads lose 30% of the sales-generating power of the original 30-second version. That still makes it a sensible choice, as it yields a 40% improvement in ROI (70% of sales for 50% of the cost), but it doesn’t compare with the 100%+ improvement offered by this technology.

EXHIBIT 2 SCIENTIFICALLY- COMPRESSED ADS ARE STRONGER THAN THE ORIGINALS IN 95% OF CASES

Emotional engagement and memory activation were increased in response to compressions.

Less attention was required for viewers to process the ads.

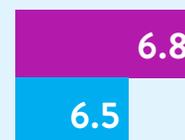
EMOTION



MEMORY



ATTENTION



- ORIGINAL
- COMPRESSED

Source: Nielsen Neurofocus analysis of 70 ads

MAKING “THE GOOD WIFE” BETTER

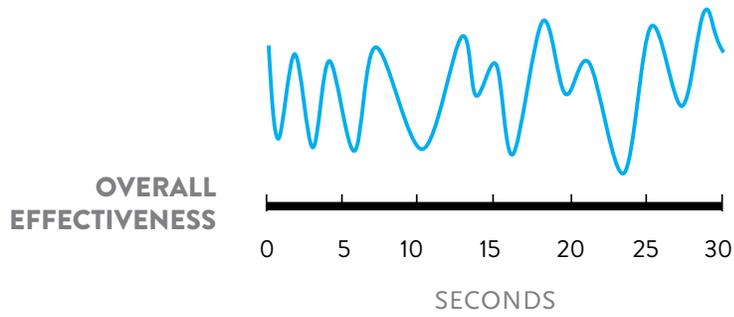
In marketing the critically acclaimed program, “The Good Wife,” CBS made two promotions for the show: one we will call “Prison,” and one we will call “Intrigue.” “Intrigue” concerned a romantic relationship between the lead character and one of her colleagues, and was designed to appeal to the current fan base. “Prison” previews an episode in which Alicia Florick, the main character, asks a convicted murderer for his help; in return, he asks for his freedom. This ad was designed to attract non-viewers to the show.

Neuroscientific analysis showed, surprisingly, that the “Intrigue” promotion performed better with non-viewers than the “Prison” spot that was actually designed for them. Exhibit 3 shows an analysis of the “Prison” spot, with measures of attention, memory and emotion rising and falling throughout. The line on the top is an aggregate measure of overall effectiveness.

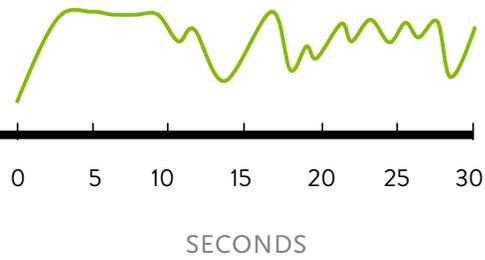
What we see from the analysis is that non-viewers of the show have difficulty understanding the first 5-10 seconds of “Prison”: this is why attention rises and remains high for a sustained period. In combination with low emotion scores, this high-attention phenomenon suggests that “Prison” lacks the necessary exposition to emotionally engage non-viewers unfamiliar with the drama’s characters or storyline.

TRACKING VIEWER RESPONSE ON A CONTINUOUS BASIS

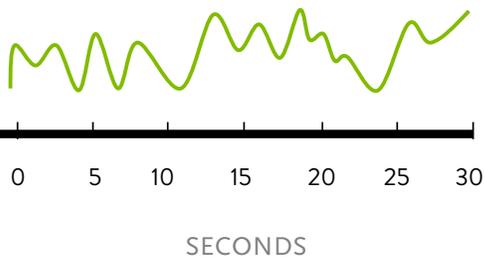
EXHIBIT 3



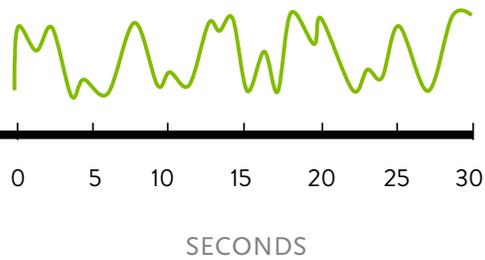
ATTENTION



EMOTION



MEMORY



Source: Nielsen NeuroFocus study for CBS, December 2011

In response to these findings, CBS chose to move ahead with “Intrigue” and to hold “Prison” back on the basis that it needed rework before airing.

Normally, the 10-second spots in a promotional schedule for a program function simply as reminders of the message conveyed by the 20- and 30-second spots. In this case, the creative team used analysis of the 30-second “Intrigue” along with a neuro-compressed version to guide the development of a 10-second spot that would be more effective in driving viewership.

* * * *

This is what’s next: not all ads can be “told” in as little as 10 or 15 seconds, but our experience suggests that about 90% can. Almost always, then, the precision offered by EEG analysis can significantly lower the required investment for an advertising campaign without any loss of effectiveness. Often, it improves it.

The prize can be massive. The biggest consumer goods companies might free up tens of millions of dollars in annual advertising spend on current campaigns by applying this technology. And networks can only benefit if the advertising they air is more powerful. Everyone wins: That should create a good feeling we can now measure.

Joe Willke is President, Nielsen NeuroFocus and Blake Burrus is Senior Vice President, Client Service, Nielsen NeuroFocus. You can reach them at joe.willke@nielsen.com and blake.burrus@nielsen.com.



ABOUT NIELSEN

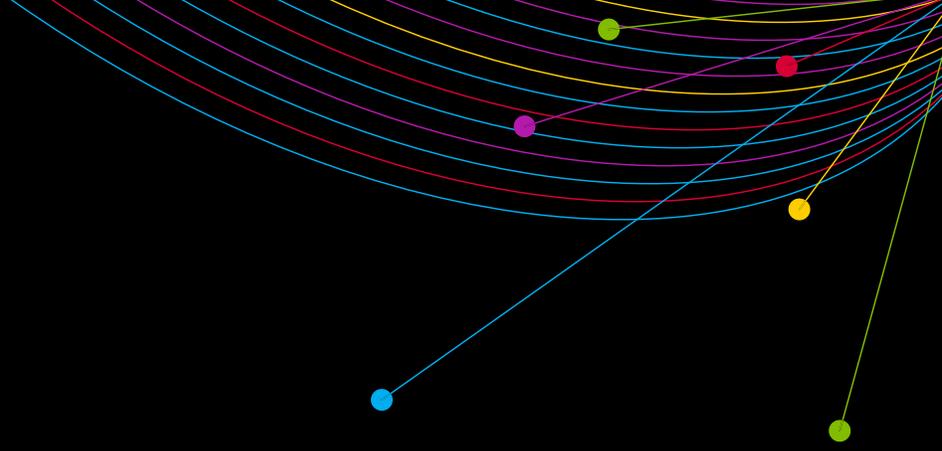
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