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Completing the Picture

BY CHARLES YOUNG

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The multitude of choices available today in the field of advertising research can be confusing. Most of us are familiar with the standard ad quality metrics for predicting sales using measures such as recall and persuasion, attention and brand linkage, message communication, and brand preference. However, there is now a whole host of competing scientific techniques that require measurements of brain waves, brain image scans, facial response, eye tracking, heart rate and skin conductance, response latency, etc., that claim to reveal how advertising exerts its hidden power on the unconscious mind.

This new competitiveness in an important category of research is driven not only by advances in technology, but also by the current popularity of the new sciences of the mind. It also represents a challenge to marketers and researchers to reconsider the standard mental models that we use to think about how advertising works.

Fortuitously, a recent book by a Nobel Prize winning economist points toward a new framework for understanding advertising. Daniel Kahneman won his prize based on research on another important marketing variable, price, but in his new best seller *Thinking Fast and Slow,* he summarizes his life's work on economic decision-making with psychological concepts that can also stretch the way we think about the role advertising plays in economic decisions.

In the first part of his book, he describes in detail the differences between two distinct systems that the mind uses to process information and make decisions about the world. In the second part of his book, he explains the important differences between experience and our memory of an experience— an important insight for understanding the mental processes by which advertising experiences are turned into branded memories.

As we will shortly see, by putting together the theoretical constructs from the first and second parts of Kahneman's book, we can create a simple matrix that provides a powerful organizational framework for understanding how all of the new ideas and methods that are revolutionizing the field of advertising research might fit together.
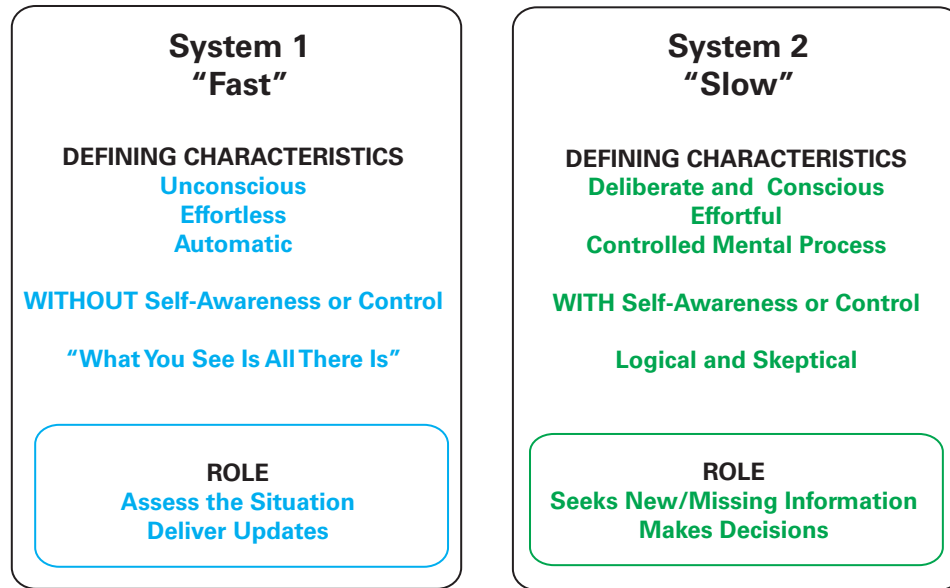
System 1 versus System 2 Thinking
This may simply be a more up-to-date and insightful way of looking at what advertising researchers have historically referred to as "low involvement" versus "high involvement" processing. System 1 "fast" thinking refers to the automatic processes of the mind that operate below the level of consciousness, while System 2 "slow" thinking refers to the more deliberate, conscious processes that we identify with rational decision-making (see Exhibit 1).

The primary job of System 1 is to continuously assess the situation of the world around us and to give us updates as to what is going on. It includes instinctual actions that we share with other animals— such as reactions to loud noises.

It is the default mode of our perceiving mind, and as such appears to be effortless, automatic, and unconscious. Indeed we appear to have no conscious self-awareness or control over the operations of System 1.

Exhibit 1

A Comparison of System 1 and System 2 Thinking

System 1 "Fast"	System 2 "Slow"
DEFINING CHARACTERISTICS	**DEFINING CHARACTERISTICS**
Unconscious	Deliberate and Conscious
Effortless	Effortful
Automatic	Controlled Mental Process
WITHOUT Self-Awareness or Control	WITH Self-Awareness or Control
"What You See Is All There Is"	Logical and Skeptical
ROLE Assess the Situation Deliver Updates	**ROLE** Seeks New/Missing Information Makes Decisions

At its core, System 1 works through the process of associative memory. It continuously intuits causal connections between words and images, feelings and actions, ideas and memories in order to build a coherent interpretation of life as we experience it. It is our internal storyteller.

For example, System 1 processing is key to our ability to watch movies. It is not at all obvious why the process of cutting up visual experience and rejoining it in non-linear ways that violate the continuity of real life should be anything but confusing. But it is precisely the ability of the mind to rapidly see connections between discrete images flowing in a stream toward the eye and to make the perceptual leap of interpreting a meaning or inferring a causality of action between juxtaposed visual moments that make moving pictures such an emotionally powerful form of storytelling.

One of the defining characteristics of System 1 thinking is the phenomenon that Kahneman describes as "What You See Is All There Is." By this he means to say that System 1 pays no attention to what it does not know. It only works with ideas that have been primed and activated in the system. Like the blind spot in the rear view mirror, it cannot see gaps in logic. As a result, it rapidly reaches conclusions and makes decisions with a minimum amount of information. Less information is more for System 1 thinking.

As Kahneman cheekily points out, System 1 is our mental system for leaping to conclusions.

In contrast, System 2 thinking is pretty much what we mean when we attempt to describe rational thought and rational decision-making. It is a controlled mental process requiring a great deal of effort in terms of focusing our attention.

System 2 is the system involved in doing work, making friends, building family and social relationships. It exerts self-control and creates self-awareness. It is logical, skeptical, and seeks out new or missing information in order to improve its ability to make decisions.

The problem with System 2 is that it is an energy-intensive process. The more tasks it takes on, the more energy it requires. As a result, System 2 attempts to conserve energy by doing as little work as possible and when feeling cognitive strain, defaults to System 1. In short, System 2 is powerful but lazy.

Both systems are important for understanding how advertising works. Once it's engaged, System 2 usually has the final say in economic decision-making—though that may simply be to rationalize a System 1 decision that feels good. But it's clear to anyone working in the business that much of modern advertising operates by engaging System 1, which requires little cognitive strain on the part of the consumer.

Experiencer Self versus Remembered Self
In the second half of his book, Kahneman tells a story about someone who listens to a recording of a long, beautiful symphony that is interrupted at the end by loud scratches on the cd. "The experience was ruined!" the listener exclaims. But, as Kahneman points out, ninety-five percent of the experience was not ruined, for the listener experienced many minutes of blissful music before the scratches—it was only the *memory* of the symphony that was ruined.

The story is used to illustrate the idea that we all have two selves: the first is our Experiencer Self, who lives in the moment, in the continuous flow of time; the second is our Remembered Self, who composes stories out of the significant events and moments in our lives and keeps them for future reference in decision-making.

A key difference between the two is how each of our selves experiences *time*. For the Experiencer Self time is linear, like that measured by the clock, where each moment is of equal weight or significance. For the Remembered Self, time is nonlinear, duration is not important, and two types of moments carry more weight than others—(1) peak moments of emotionally charged, meaningful experience and (2) endings, or how things turned out. These two types of moments, after all, are the keys to good storytelling.

In the end, it is the Remembered Self that is the decider. It keeps score and governs what we learn from living. We choose by memory, not experience, when we decide to repeat an experience.

But for marketers it is important to appeal to both selves. For the past few years our industry has been tightly focused on the idea of *engagement*. A lot of the new ad research methods, for example, have been developed to measure how the Experiencer Self engages with advertising in real time.

Counterbalancing this is the need to understand the mysterious process by which advertising experiences get converted into branded memories. For brands reside in the Remembered Self.
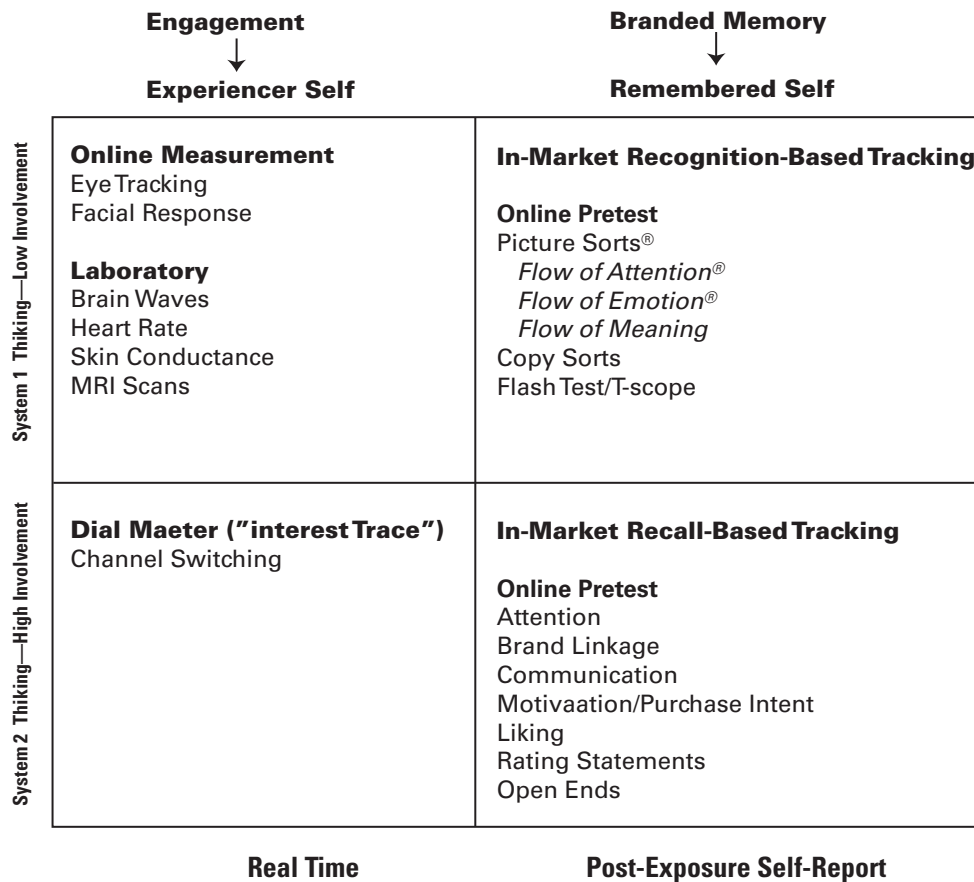
The Matrix
Looking past Kahneman's book, a useful next step is to assemble the dichotomous categories he describes to build an analytic matrix for thinking about advertising. The matrix shown in Exhibit 2 shows how this framework can be used to classify different advertising research techniques.

The upper versus lower half of the matrix is a division between System 1 Thinking versus System 2 Thinking. The left side deals with how advertising engagement with the Experiencer Self might be measured with these new instruments in real time, while the right side deals with how branded memories can be retrieved from the Remembered Self, by asking questions after advertising exposure.

There is no implication that any one quadrant is more valid than the others since each represents a piece of the whole truth of our total self. Indeed, information and insights gleaned from each of the four quadrants has the potential to complete the picture of how advertising works.

Exhibit 2

A Classification of Advertising Research Techniques
Based on Kahneman's Categories

	Engagement ↓ Experiencer Self	Branded Memory ↓ Remembered Self

System 1 Thiking—Low Involvement	**Online Measurement**
	Eye Tracking
	Facial Response
	
	Laboratory
	Brain Waves
	Heart Rate
	Skin Conductance
	MRI Scans
		In-Market Recognition-Based Tracking
		
		Online Pretest
		Picture Sorts®
		    Flow of Attention®
		    Flow of Emotion®
		    Flow of Meaning
		Copy Sorts
		Flash Test/T-scope

System 2 Thiking—High Involvement	**Dial Maeter ("interest Trace")** Channel Switching	**In-Market Recall-Based Tracking** **Online Pretest** Attention Brand Linkage Communication Motivaation/Purchase Intent Liking Rating Statements Open Ends
	Real Time	**Post-Exposure Self-Report**

Let's briefly look at how the research techniques fall in each quadrant, starting in the historical order in which they were developed.

Lower Right Quadrant: Remembered Self/System 2 Thinking
The oldest pre-testing technique, dating back to the 1950s, is to measure the effectiveness of an ad with a recall test. Day-after-recall testing, and its companion, in-market telephone tracking studies of ad awareness, was the dominant research methodology used during the days of *Mad Men*.
The mental model of advertising that this kind of research is based on is the simple logic that for an ad to have an impact on future sales behavior, it must leave behind some kind of memory trace in the mind of the consumer.

Even today, mainstream online pre-testing systems, such as Ameritest, ASI and Millward-Brown, rely heavily on verbal self-report measures such as attention, brand linkage, communication, motivation or purchase intent, rating statements and open ended questions about respondents' memories of their reactions to an advertisement.

Such verbal probing of a respondent is clearly a System 2 Thinking activity.

Lower Left Quadrant: Experiencer Self/System 2 Thinking
One of the earliest techniques that acknowledged the difference between how an ad is remembered as a whole gestalt and how it is experienced in real time, moment by moment, was to use a dial meter that respondents would turn as they viewed an ad, to signal their feelings as they introspectively watched themselves watching the ad.

This real-time process of introspection, as well as the conscious need to focus attention on moving the dial (or today a mouse)—loosely akin to the process of channel surfing when watching real television—keeps this technique strongly rooted in System 2 Thinking.

Upper Left Quadrant: Experiencer Self/System 1 Thinking
The current level of interest in biometrics and neuroscience is actually the second wave, since researchers as far back as the nineteen-seventies were interested in probing non-verbal reactions to advertising with brain waves etc., before advances in technology made today's techniques more practical and reliable.

While this set of techniques is quite diverse, they do share a commonality in the instruments they use to measure physical reactions of the Experiencer Self in real time, without any self-reporting of responses from the conscious brain of the respondent—i.e. they are all looking for indicators of unconscious System 1 Thinking occurring while a respondent is viewing an ad.

Upper Right Quadrant: Remembered Self/System 1 Thinking
As online research began to replace telephone surveys in the last decade, the method of tracking consumer awareness of advertising campaigns in-market moved away from recall-based questioning using verbal cues to a recognition-based measurement using visual cues such as video stills or edited clips.

The key idea is that recognition is a better way to retrieve deep memories from the Remembered Self than is recall, which is akin to the argument that a truer test of whether or not you've met someone is that you recognize their face rather than their name.

Recognition certainly gives different results than recall and much of the difference in our experience appears to be related to the difference between System 1 and System 2 Thinking--though this is clearly a fruitful area for further research.

From a management standpoint, often times when confronted with discrepancies between ad pretesting and ad tracking results, recognition-based tracking is generally considered to come closest to the "truth."

And so powerful new forms of online ad tracking are beginning to emerge, such as those provided by the company Communicus, which combines recognition-based measurement with cohort analysis of the target audience. These fresh approaches have the potential to yield very interesting new findings on how different media—TV, digital, print, outdoor, etc.—work together to created branded memories.

In the pre-testing arena, our company Ameritest uses diagnostic picture sorting techniques to probe short-term memories shortly after ad exposure—a technique of deconstructing frame-by-frame the remembered viewer experience of a test ad.

We developed Picture Sorts® to explore the processes of rapid cognition—e.g. pre-conscious filtering or selective attention—involved in watching movies. The many published experiments we have done over the years clearly demonstrate that this is related to System 1 Thinking.

An analogous approach to probing the intersection of rapid cognition and memory is used in the testing of print or digital ads. This Flash test is basically an online version of the classic tachistoscope, or t-scope, where consumer responses are measured after brief, controlled-time exposures of the test ad, for a fraction of a second or a few seconds.

Improving Ad Research Insights
If we start with the assumption that *all* of the techniques listed in the matrix, when used by a reputable research supplier, have a legitimate claim to a piece of the truth, the real question becomes, *What new insights or predictive power can be gained by using different techniques in combination?*

To begin to sort this out, it is useful to first look at what might be gained by combining techniques falling within a specific quadrant, and second, to look at what might be learned from putting together combinations across different quadrants.

Within Quadrant Analysis
To understand the value of combining techniques within a quadrant, it is easiest to start with the most familiar case, the metrics provided by the big, mainstream pre-testing systems falling in the lower right-hand quadrant.

Over time, these systems have evolved based on learning that different questions can provide equally important, but complementary measures of advertising quality. For example, it is now generally accepted that attention-getting power, brand linkage, motivation, and communication are all important predictors of in-market performance. As a result, these metrics have become widely adopted as "report card" measures of performance that advertisers use to make go/no go decisions.

But another thing mainstream systems have learned is that other questions, while not as important as the primary, report card metrics just mentioned, can provide very useful diagnostic insights into the reasons why a particular ad is performing the way it is. For example, a high entertainment rating score is not important in and of itself, but only insofar as it is a useful explanatory variable correlated with the attention-getting power of an ad—and more recently, as one of several indicators of an ad's likelihood of going viral on the Internet.

Moving to the upper right-hand quadrant, one of the things we quickly learned at Ameritest is that, similar to verbal questioning, one picture sort was not enough. To provide a *complete* set of diagnostics for the visual effectiveness of an ad, we need to look at a more *complete* picture. We ultimately developed three: to measure memory, feelings, and the meaning of visual imagery. And to complement that, we developed two copy sorts, measuring recall and relevance, to measure the verbal component of an ad.

Looking to the upper left-hand quadrant, the new, interesting biometric techniques are still at the stage of experimentation. For example, much remains to be learned about whether or not brain wave measurement is more or less predictive of ad effectiveness than measuring heart rates or coding the emotions on respondents' faces. Whether some of these techniques should be viewed as primary "report card" measures and others as secondary "diagnostics" remains to be sorted out.

Moreover, because many of these different techniques are being promoted by different small technology startups, it is still early days for learning the benefits to be gained by putting these techniques together in different combinations. It is encouraging to see the results obtained by companies like Sand's Research, which combines brain wave measurement with eye tracking, and as a result is emerging as an insightful researcher of in-store advertising.

Cross-Quadrant Analysis

What is perhaps more interesting is to look at what we might learn when we combine techniques from across different quadrants, for this gives us the opportunity to truly view the consumer in an insightful, more holistic way across Kahneman's categories.
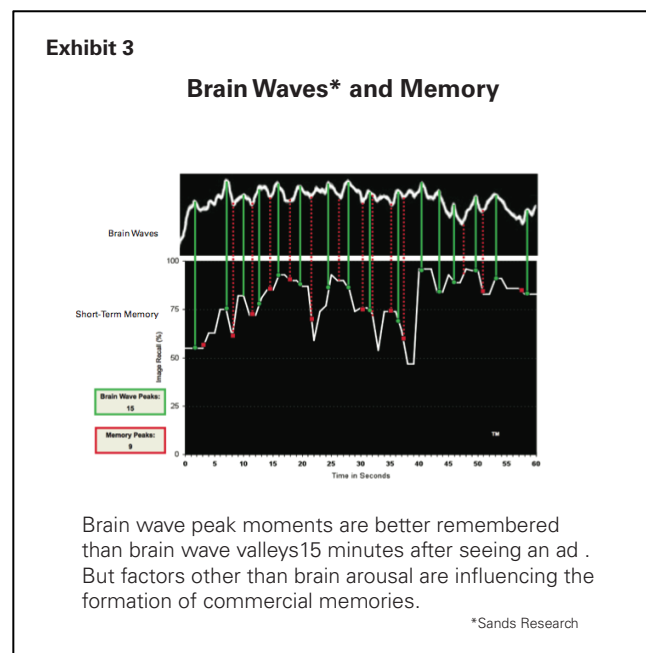
Our own Ameritest pre-test combines techniques from the upper and lower halves of the Remembered Self. What we learned from building models from our database is that by using information gained from both quadrants of research techniques we could double the explanatory power of our diagnostics.

For example, to explain commercial performance in terms of breakthrough power, a picture sort could explain about half the total variation in ad performance, while a small set of verbal rating statements (e.g. entertainment, uniqueness) could explain the other half. So, in any given pre-test we decided we needed both types of information to figure out what was going on.

Over time, we also learned which picture sorts to use to diagnose different kinds of problems. To diagnose what is going on with attention and branding, we use the Flow of Attention®, which is based on sorting pictures in terms of short-term recognition memory. To diagnose motivation or purchase intent, we use the Flow of Emotion®, which is based on sorting pictures in terms of the feelings viewers remember experiencing as they watched the ad. And to diagnose communication and the brand perceptions being created, we use the Flow of Meaning®, which is based on sorting pictures from the test ad into multiple categories of strategic meaning.

Future innovation in our field is going to come from combining the techniques in the upper left-hand quadrant with information gained from the other quadrants into a single efficient test design.

Our own experiments suggest that there is much to be learned from these combinations. In one series of experiments we conducted with brain waves (see Exhibit 3), we found them to be a strong predictor of our Attention Score, but that they are not strongly correlated with our Flow of Attention® picture sort, which itself is a strong predictor of Attention. Upon investigation, one of several hypotheses we identified was that in some commercial scenes, brain waves peak with the arousal of curiosity in the Experiencer Self at the beginning, while the picture sort memory peaks from the Remembered Self occur at the resolution of meaning, falling at the end of the scene.

Exhibit 3

Brain Waves* and Memory

Brain wave peak moments are better remembered than brain wave valleys 15 minutes after seeing an ad. But factors other than brain arousal are influencing the formation of commercial memories.

*Sands Research

In another series of experiments we conducted with online facial response, we found some interesting similarities and differences with our picture sort diagnostics. The total positive and negative facial response graphs from the Experiencer Self were quite similar to the Flow of Emotion® we obtained from the Remembered Self (see Exhibit 4). This was similar to our experience with a number of client tests comparing remembered feelings to heart rate/skin conductance for a dozen or so ads. It seems the ability of a respondent to accurately recall their positive or negative feelings from ads may not be as hard as we think.

Exhibit 4

Comparison of Positive and Negative Emotional Response for Picture Sorts and facial Response

Facial Response

Picture Sorts-Flow of Emotion

Experienced Emotion
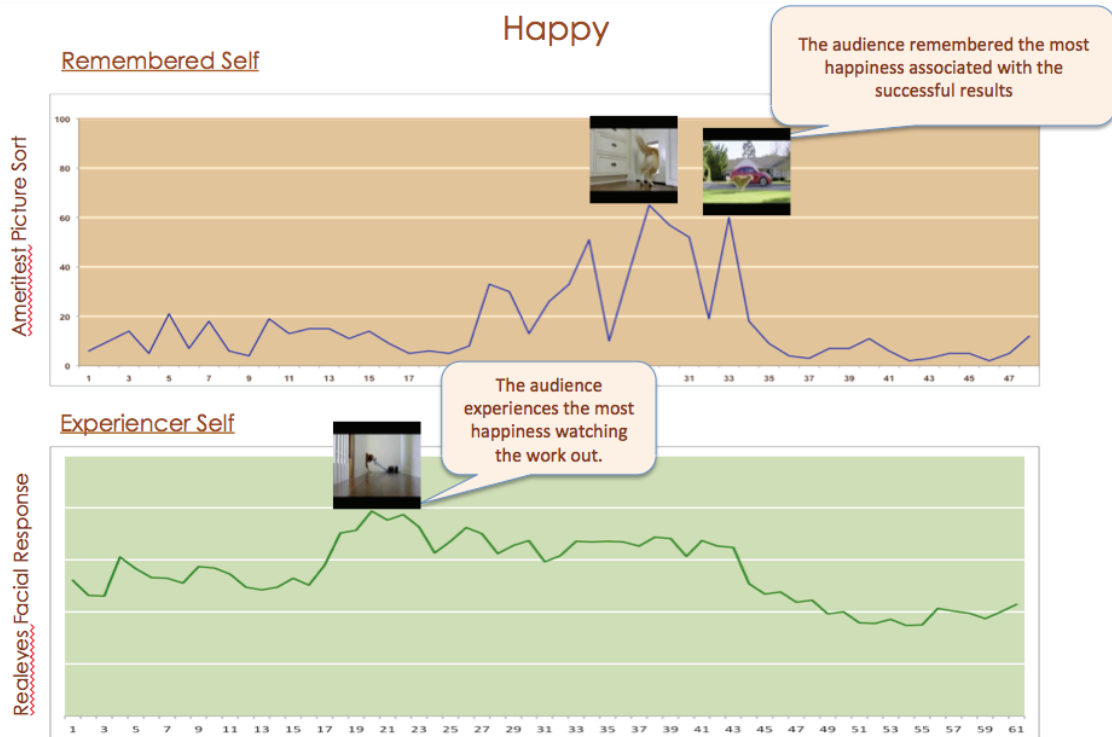
Remembered Feelings
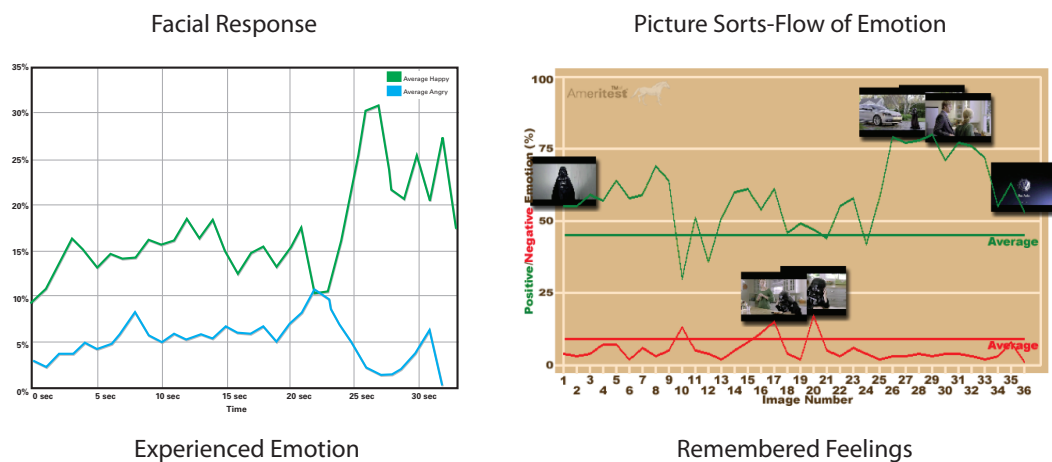
In terms of overall positive and negatives, experienced emotions and remembered feelings are similar.

However, the situation was quite different when we looked at the memory of particular types of emotions recalled (see Exhibit 5). In a test of a Super Bowl ad, we found that the audience memory of the "happiest" moment in the ad was most strongly associated with an outcome shown in the ad (a physically fit dog), whereas the happiest moments measured by facial response during the experience of the ad was associated with the process of working out (the dog exercising). This reminds us that our Remembered Self is constantly updating and revising its version of what we just experienced.

Exhibit 5

Comparison of Remembered Emotions vs Experienced Emotions

Happy

Remembered Self

Ameritest Picture Sort

The audience remembered the most happiness associated with the successful results

The audience experiences the most happiness watching the work out.

Experiencer Self

Redleyes Facial Response

In terms of specific emotions, experience and memory can be quite different.

Looking Forward

Currently, using online cameras for eye tracking and for measuring emotions through facial response coding are two of the hottest areas of innovation. It is easy to imagine how either of these two techniques might be refined by combining them with information from another quadrant from the Kahneman matrix.

Currently eye tracking tells you where a viewer is focused on screen, but it does not reveal what is going on in the brain as the eyeball is looking. But someday it might be possible to use eye tracking to determine when memories are being formed. We know from neuroscience that memory is suppressed when the eye scans or "saccades," and so memories appear most likely to occur at points of eye fixation. By correlating data on rates of eye fixation with short-term peaks of memory obtained with the Flow of Attention® picture sort, it should be possible to prove this hypothesis and calibrate eye tracking cameras to record the moments when experience is turned into memory.

One of the limitations of facial response measurement technique is that the types of emotions that can be coded are like primary colors; there are only about six primary emotions. In general, marketers have a much more highly developed palette of emotions that they are trying to associate with their brand—e.g., confident, sexy, powerful, fun. It certainly seems possible to *teach* the neural-net software that performs the facial response coding how to read a much wider range of emotional responses on the face of the Experiencer Self by calibrating facial expressions with Picture Sorted meanings obtained from the Remembered Self.

Innovation research programs such as these could move advertising researchers much further along in terms of understanding how the unconscious processes of System 1 engagement are turned into System 1 branded memories.