TIME TO DECIDE

Measuring response time for innovation and brand growth

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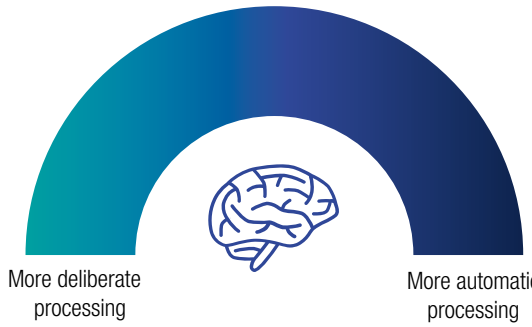
WHAT RESPONSE TIME CAN TELL ABOUT CHOICES

We are faced with a myriad of decisions every day. While some of these more routine decisions are completed quickly and almost without awareness, others might require further reflection. Whether complex or simple, our decisions arise along a continuum, where multiple cognitive processes are operating at the same time (see Figure 1). These cognitive processes range from more mindful to more mindless, but these represent the extremes of a continuum rather than two mutually exclusive alternatives.

The time we take to make a choice has been extensively measured in academic research to examine cognitive processing and decision-making. Whether we pay a little or a lot of attention when making a choice, our decision-making is regulated by an adaptive control process in the brain that can dial up more deliberative processing as required.[1] Response time has been used to understand this adaptive control function that regulates whether the decision-making process is carried out in a more automatic fashion (such as picking your everyday brand), or a more deliberative manner (as would be the case when considering competing options for a larger purchase), such as a car.[2]

Response time has also been extensively linked to the accessibility of information in our memory. This reflects how active particular attributes are when it comes to choosing a brand. For example, "nutritious" might be an active attribute when choosing a baby food brand.[3] If no disruption occurs on this adaptive control function, response times will be faster, indicating the information is easily accessible in the individual's mind. Slower response times indicate that the information is less accessible in memory, or that the cognitive process has been disrupted. In this case, a slower response time might reflect that nutrition is not a very active feature in the consumer's mind when thinking about a specific baby food brand.

Figure 1 Mindful-mindless continuum



Source: Ipsos 2020

Ipsos is working with leading academics and university programmes to frame the theoretical foundations of our scientific developments

"First proposed by Dutch physiologist and ophthalmologist Franciscus Donders in 1868, response times have been an integral component in cognitive psychology, providing valuable insights into processing differences between tasks and component processes. Their use in marketing research gained in popularity through implicit tests, where faster response times were seen as being indicative of stronger implicit associations.

As part of my collaboration with the Ipsos Global Science Organisation, we developed a new dynamic decision-making framework where decisions are characterized as a continuum between automatic and deliberative processes. Response times are a critical component in this framework, providing valuable insights into the extent of adaptive processing and conflict experienced by the consumer. These insights are integrated in a thoughtful and meaningful manner in tools like Duel and MCRT, discussed in this paper. Critically, the algorithms in each of these offerings are carefully adapted and calibrated to account for individual and cultural differences in cognitive processing as well as variability in the speed of motor response across individuals and trials."

- **Vinod Venkatraman, PhD**
Fox School of Business, Temple University.

A study conducted by the Ipsos Global Science Organization in 2020 examined the role of response time in conflict detection, one of the potential reasons for disruption in the adaptive control function. We explored how conflict detection can be applied to explore the effectiveness of an intervention, such as a commercial advertisement (see Figure 2).

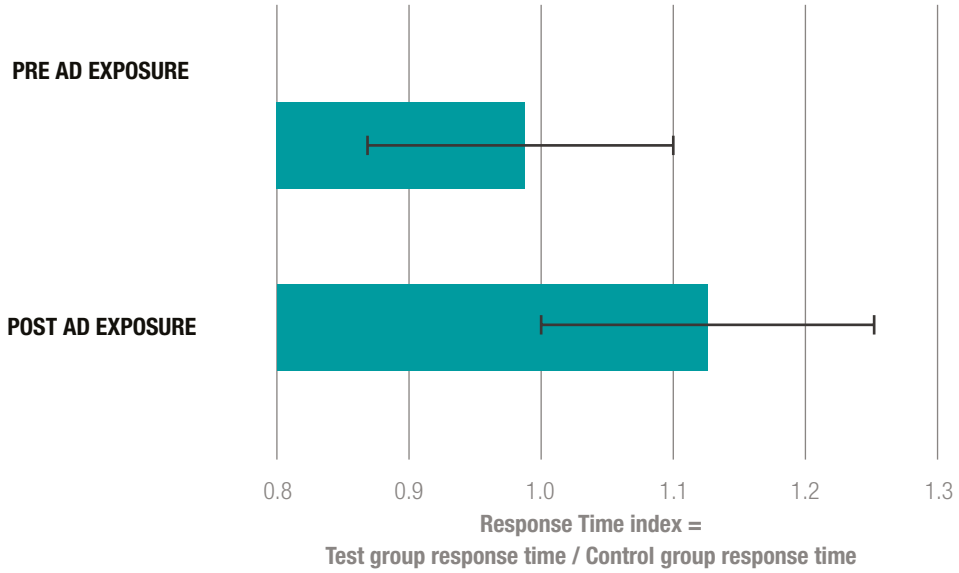
In the study, respondents were asked to choose between brands within a category before and after being exposed to a known effective intervention for a challenger brand not currently in their consideration set. We compared the response time before and after the intervention (in this case, a commercial). Our results showed that an effective intervention for the initially non-preferred brand generates conflict in the decision-making, slowing response time after ad exposure and potentially changing brand choice.[3]

This finding opens the door to a range of new insights that can be derived from the measurement of response time, across many types of evaluations and decisions.

In this paper, we will present how incorporating response time into market research studies can go further to inform successful innovation and brand growth.

"Incorporating response time into market research can go further to inform innovation and brand growth."

Figure 2 Reaction time to select leader brand (seconds)



When testing how long it took respondents to choose the 'leader brand' before and after viewing an ad for a challenger brand, we found response times were slower after ad exposure. An effective intervention (ad) for the initially non-preferred brand disrupted the decision-making process, slowing response time and potentially changing brand choice.

Source: Ipsos Global Science Organisation, 2020

PRODUCT INNOVATION

When it comes to choosing new products, consumers are generally limited in time and attention, so they tend to make decisions fast and intuitively – unless something slows them down. The average consumer spends less than 7 seconds making a purchase decision in-store. If the decision-making process is disrupted, either by conflict or a change in context or goals (by an effective intervention, for example), it takes more time and the outcome may even change. It is important that research solutions resemble how people live and make choices such as purchase decisions. This is why we integrate reaction time measurement into research approaches that mimic the way consumers make decisions in the real world.

DUEL

Duel is a fast and agile Ipsos research tool that uses a gamified approach to screen simple marketing elements such as claims, varieties, names, and visuals. Survey respondents are presented with pairs of stimuli (e.g. claims) and asked to indicate which they prefer. The time it takes a respondent to make their choice is captured. Stimuli chosen more quickly are appealing at a more visceral and automatic level. Capturing this quick succession of choices in a "tournament" design provides clear insights into which claims are more appealing.

In one case, a packaged foods company asked Ipsos to help them to identify compelling claims to use on the packaging of a line of their products. The claims tested were divided into groups/topics, such as health or ingredients, to discover which were most compelling.

Through Duel, the client was able to isolate the performance of each individual claim, identify the most appealing ones, and use this information to determine what they would use for the front and back of their product packaging. The groupings were not visible to respondents, but by structuring the results as such, the client was also able to identify which groups/territories elicited more automatic responses, and therefore greater instant appeal (see Figure 3).

With these tried and tested methods, it is possible to ensure that innovation evaluation is reliable and provides insights that translate into in-market performance. In test-retest studies (where data is collected at different times to assess reliability) the Duel approach has achieved correlations of about 0.95. In addition, Duel preference scores have been shown to have a strong correlation with established in-market validated metrics ($r > 0.7$).

Figure 3 Claims testing for new product packaging

Source: Duel claims study: Henry's Hard Sparkling. US, c. 400 respondents, 2017

Including response time in innovation assessment gives greater assurances that the design features or communications tested will have the desired effect in-market as it captures nuances of consumer response and attention.

For example, a clothing and accessories manufacturer that used Duel to select the best fabric patterns for their product lines found a high correlation between the tested fabric performance and actual sales data. They adopted it as their standard screening tool for seasonal product patterns as a result.

In another example, we conducted an internal study to find a winning advertising claim through Duel. To do this, we created, launched and tested two Facebook ads by a fictitious brand and measured how well each claim did. The emotional claim won, outperforming the functional/rational claim by 42% on click-through rate – a significant margin.

INNOTEST

Another complementary approach to innovation assessment, InnoTest, evaluates the potential of new concepts by asking consumers to evaluate innovations relative to their current product/solution. InnoTest uses three choice questions to determine the potential of an innovation. Respondents make choices based on the following measures, which we refer to by their acronym RED:

1. Relevance: which product better meet their needs.

2. Expensiveness: which product is more affordable.

3. Differentiation: which product offers more unique benefits.

These three choices are the primary inputs used for calculating an overall innovation trial score. The more people who choose the new product on the three metrics, the greater the trial score.

For each of the three RED metrics, InnoTest also captures the amount of time respondents take to make the choice and these response times are used to refine the trial score. A faster response time indicates greater conviction in the choice and boosts the trial score. A slower response time indicates hesitancy and lowers the trial score. So, this test is a way of understanding how much automatic appeal the products offer.

In one such case, two hair care innovations were evaluated using InnoTest RED metrics (including the total trial score) as well a more traditional metric: purchase interest. We found that interest in purchase (measured by a 5-point scale question on how likely a person was to buy it) did not provide enough discrimination between options to support a business decision. However, the trial score identified the winning concept clearly as it was favoured in choice exercises and also came out top with a faster response time. (See Figure 4 on the following page).

“A faster response time indicates greater conviction in the choice and boosts the trial score.”

Figure 4 Hair care product concepts

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Concept 1		Concept 2	
Definitely would buy	42	Definitely would buy	44
Definitely would buy Probably would buy	81	Definitely would buy Probably would buy	83
TRIAL INDEX (Quicker response time)	118	**TRIAL INDEX** (Slower response time)	103

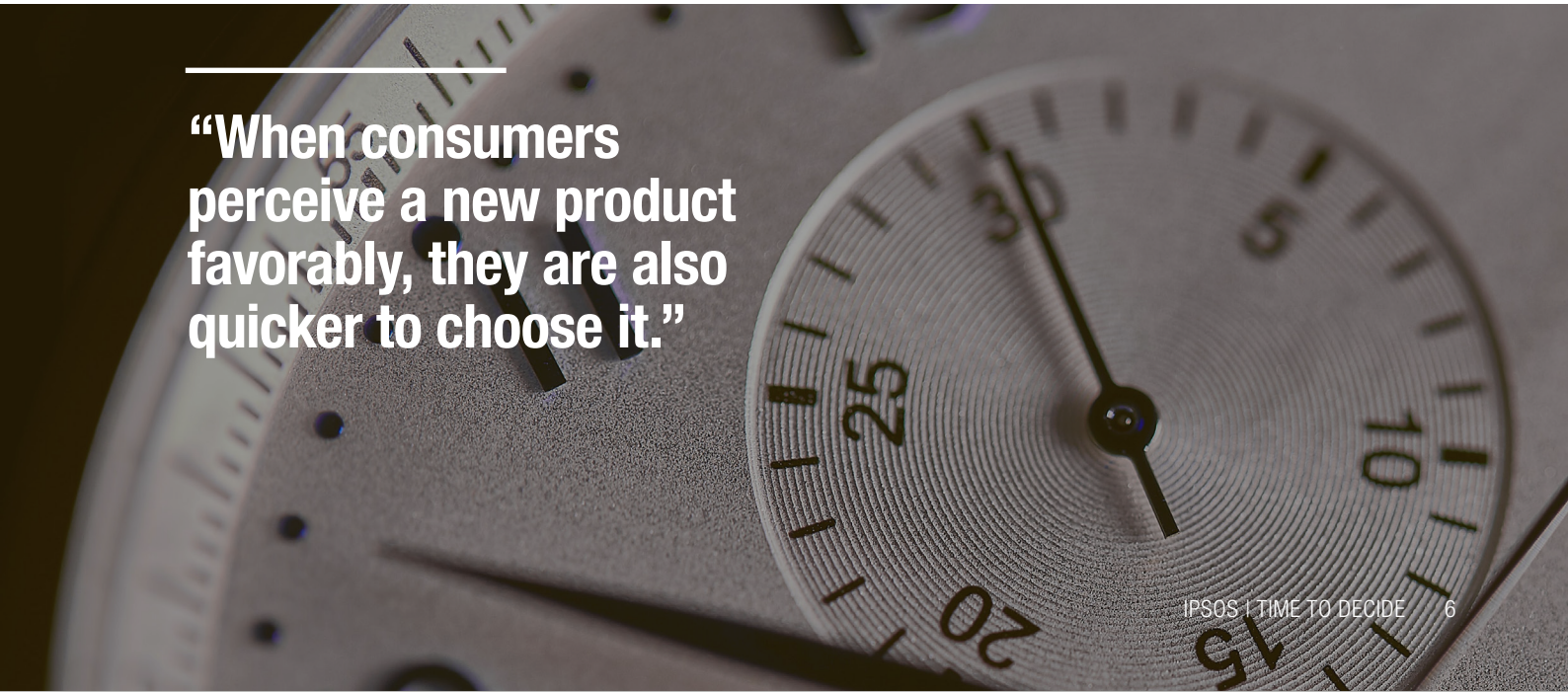
Source: Ipsos InnoTest study in Brazil

We have also been able to illustrate the real-life impact and added value of response time for InnoTest. In one R&D study, we invited respondents to evaluate innovations across three consumer packaged goods (CPG) categories using Ipsos' RED measures and capturing response time. After completing the RED metrics, we invited participants to shop from a virtual shelf and observed the purchase decisions in action.

We wanted to find out whether response time improves our ability to predict how well a product will do in the shelf trial beyond self-reported preference. Indeed, analysis of our data found that, for each concept performance group, response time further differentiates consumers' likelihood of trying the innovation (see Figure 4).

We found response time reflects the trial score at both ends of the spectrum. When consumers perceived the new product favorably, they were also quicker to choose it. When consumers did not perceive the new product favorably, they were slower to choose it.

This research shows the useful function of response time in respondent level trial behaviour.



"When consumers perceive a new product favorably, they are also quicker to choose it."

BRAND ASSETS

As mentioned earlier in this paper, response time is also used in research to examine the accessibility of information in a person's memory. This is particularly valuable when it comes to brand assets.

Brand assets encompass elements such as colours, logos and characters which brand owners can use instead of, or alongside, their brand name to signify the brand on packaging and in advertising communications, for example. We believe the strongest brand assets have an instinctive and fluent connection to their brand with strong uniqueness of those associations. The stronger the links between assets and brand name, the easier it is for increasingly distracted consumers to identify the brand on the shelf and in advertising.

We know that using brand assets in advertising is strongly linked to positive branded attention effects – more so than directly showing or talking about the brand. Additionally, assets that leverage a brand's unique power, such as characters and sonic brand cues, can be more effective than assets that are leveraged from wider culture, such as celebrities and music.[4]

Identifying assets that are truly distinctive helps brands to decide where to focus investment and avoids risks associated with assets that may confuse consumers if seen to belong to multiple brands.

MULTI-CHOICE REACTION TIME

With this in mind, and given the need for testing a large number of assets across different brands within a category, Ipsos developed an approach that mimics consumers' actual decision-making process. We call this Multi-Choice Reaction Time, or MCRT.

During a MCRT task, respondents are shown a number of brand assets across competing brands and asked to choose which brand(s) each individual asset belongs to. By measuring the response time and using a smart algorithm calibrated to each individual, we can understand how strong and intuitive brand asset associations are.

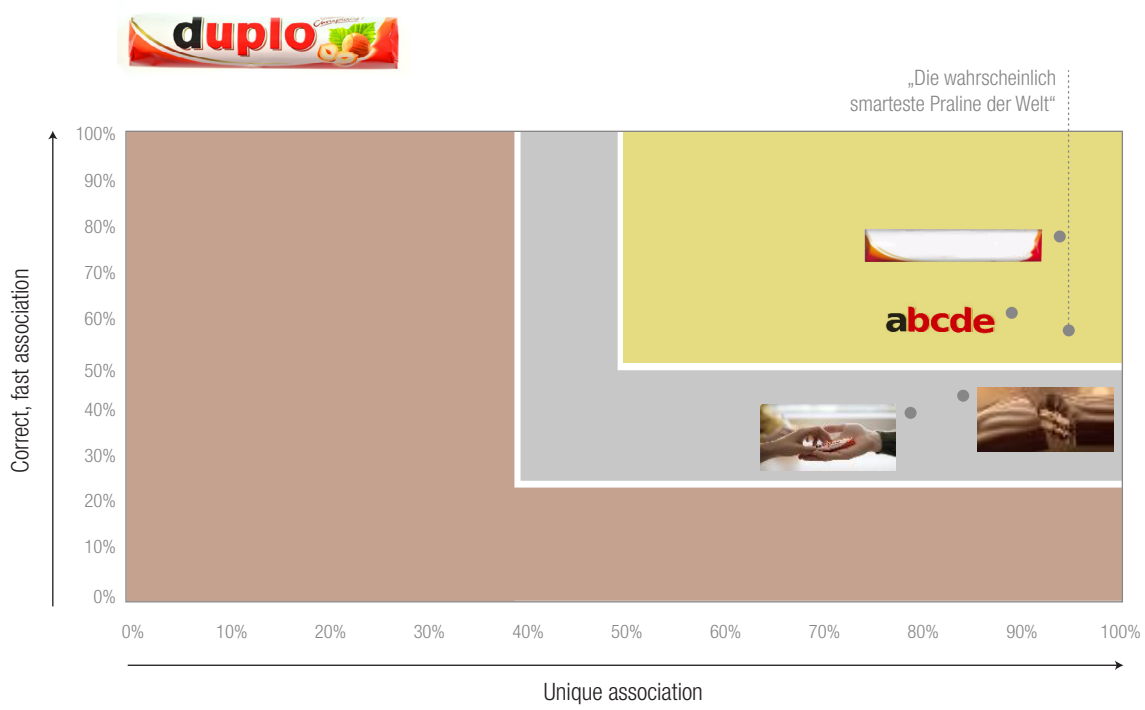
We collect the information on both explicit association between brand and asset (% correct endorsement) and implicit association (% correct and fast endorsement). This provides greater discrimination that helps brands to identify the genuinely distinctive brand assets.

We can map tested assets on two dimensions, plotting the implicit associations (correct and fast) against the uniqueness of those associations (defined as the proportion of all endorsements given for an asset which show association with the correct brand). Ideally we want assets to achieve the "Gold Standard", this being a level of 50%+ on both metrics, but comparisons with our extensive norms shows this isn't always achieved, so we split assets into Gold, Silver and Bronze categories

This graded approach allows us to identify a number of strong assets and also demonstrate that there are other assets which show potential, but would require further investment to maximise that. By knowing the strength of their assets, brands can make smarter use of them.

One example from the chocolate bar market in Germany (see Figure 5) shows the current strength of the Duplo pack and font, as well as a slogan which is a play on a long-standing alternative. The product shots and a key scene from the ad showing the product being handed over fall into the Silver category, meaning they have potential, but this is not currently being maximised through instinctive and fast associations back to the Duplo brand.

Figure 5 Gold/Silver/Bronze Brand Asset Evaluation: Duplo



Source: Ipsos MCRT study on German chocolate bar market, c.200 respondents

Our research found the agile format of MCRT to have many strengths compared to similar approaches in the marketplace. These include the quality and robustness of information provided on the relationship between brands and their tested assets, and the ability to measure brand performance in a competitive environment.

MCRT is also used to measure brand association. Alongside the overall level of association, it gives an insight into the potentially wide differences in strength of these associations with brand imagery attributes. How fast or slow brand associations happen reveals how strong they are. A fast association means that people intuitively connect the imagery with the brand.

Figure 6 (on the following page) displays a clear non-linear relationship between fast and explicit responses, highlighting the added value of measuring response time. In about 50% of the cases, we see a deviation of more than 10 percentage points from the average ratio between implicit and explicit associations. Some attributes fit much more intuitively with some brands, whereas for others the ratio is significantly lower.

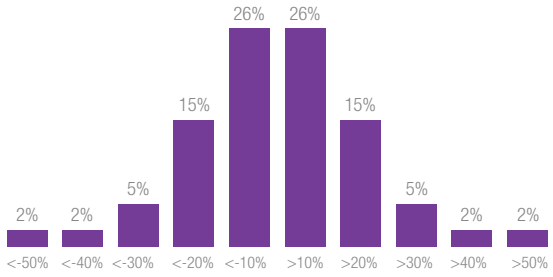
The extent to which associations range from fast to slow testifies to the fact that brands can indeed succeed in intuitively owning imagery associations. Given the often mindless way in which people make decisions, this can lead to a higher likelihood of being chosen – for instance as we browse the aisles of a supermarket.

A related application in pack design testing also highlights the value of including response time as a further dimension to understand how design impacts attribute associations.

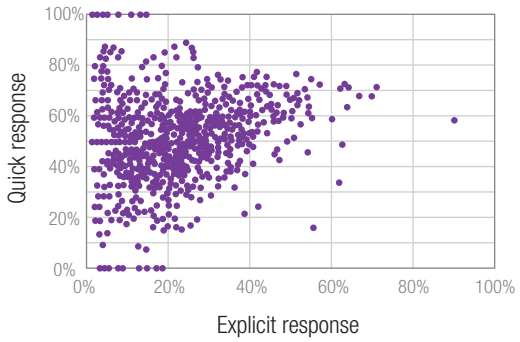
Figure 6 The non-linear relationship between fast and explicit responses

Distribution Ratio Implicit/Explicit

Average ratio of implicit to explicit = 52%



Explicit vs Quick Response



In half the cases the ratio implicit/explicit deviates from the average by more than 10 percentage points. There is no straight correlation between explicit association and the speed of response.

Source: Ipsos 2019

TIME WELL SPENT

This paper shows that the measurement of response time in research adds insights about the cognitive processes involved in decision-making and how accessible information is in our memory. Response time helps researchers to identify whether conflict exists when making a decision about preference between, for example, two claims or two concepts, and how accessible an attribute is the consumer's mind in relation to a brand. This increases our ability as researchers to discriminate between options and provides actionable insights for successful innovations and brand growth.

There are potential challenges when working with response times which come from individual differences in cognitive processing and motor response, for example. But using a strong scientific approach and validation process, our algorithms are calibrated to each individual and account for this potential variance.

Incorporating response time into our methods for testing new products and strengthening branding globally has proven valid and reliable, as shown by scientifically rigorous R&D efforts in these areas.

Response time has been shown to be an easy, versatile and scalable data source that provides rich insights into the cognitive processes of the respondent. Our expertise in translating these data into actions opens the horizon to multiple new applications in consumer and opinion research. We will continue to explore these opportunities and enrich insights through the application of response time data.

"Response time is a versatile and scalable data source that provides rich insights into the cognitive processes of consumers."

IPSOS SOLUTIONS USING RESPONSE TIME

- **Duel** screens simple marketing elements, incorporating response time to maximize granularity. It shows test-retest reliability and correlates with in-market performance. In Duel, response time increases discrimination and provides insights into the automaticity of the brand preference/choice being made.

- **InnoTest** evaluates the performance of new concepts, leveraging response time to compute its success score, the trial index. This index score has been shown to link to behavioural outcomes. In InnoTest, response time provides insights into the automaticity of the choice in the RED metrics, and higher discrimination on the trial score.

- **Multi-Choice Reaction Time** determines how strong and intuitive the link between a brand and an asset is. It has shown test-retest reliability as well as added value over the stated response. In MCRT, response time is used to examine the accessibility of information in a person's memory when it comes to brand assets.

Ipsos' ability to scale these solutions makes us the global leader in integrated reaction time research approaches which offer our clients clear, deep insights and added value.

Just in innovation testing, Ipsos has tested more than 10,000 stimuli through the Duel approach since it was first launched in 2017. Over 6,000 concepts have been evaluated through InnoTest since it was launched just one year ago. MCRT has been effectively applied across categories as varied as pet care, confectionery and other foods, household goods, pharmaceuticals and telecoms, with over 2,500 brand assets tested in markets including US, Brazil, Mexico, UK, France, Poland, Russia, China and Thailand.

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