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Consumer Thinking in Decision-Making: Applying a Cognitive Framework to Trip Planning

Kimberly Williams Ph.D.

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Abstract
As magnetic resonance studies (fMRI) evolve, we will learn more about how the brain operates during consumer decision making. Until that time, social science research can assist with understanding consumers' thought processes, as in the case of this report, which focuses on consumer decision making in connection with travel planning. This paper examines the application of a cognitive framework that is currently used in education to better understand, address, and improve thinking skills, which appears to apply to hospitality consumers' decision making. Two pilot studies of trip planning, by graduate and undergraduate students, demonstrate the potential usefulness of this cognitive framework. Since so much of the cognitive processing involved in trip planning appears to occur unconsciously, bringing the thinking involved to our conscious awareness may improve the process for consumers. Using the pilot studies and personal experience, this report explains the framework's use for consumer decision-making and suggests ways that may help us better understand and address the cognition that happens as consumers make complex travel decisions. After an early model developed in 1961 by Albert Upton, the model of eight forms of cognition examined here was formed more recently by David Hyerle. The eight forms of thinking are: (1) Defining in context, (2) Describing attributes, (3) Sequencing, (4) Causal reasoning, (5) Using analogies, (6) Comparing and contrasting, (7) Categorical reasoning, and (8) Spatial reasoning. Some of these forms of cognition appear to apply more strongly than others in trip planning, such as determining the context of the trip, describing and comparing attributes, and considering spatial or location issues. Not expressly included in the framework, but essential to an understanding of trip planning processes is the social context of the trip and those planning to travel. Moreover, since fMRI studies have shown that the brain is parsimonious and attempts to operate as efficiently as possible, any aid to decision making should be well received. A better understanding of these specific forms of thinking may allow those in the hospitality industry opportunities to create specific ways of streamlining and purposefully addressing consumer decision-making thinking processes more strategically. In particular, for example, those in the industry might consider ways to facilitate each of these forms of thinking at different stages of the trip-planning process.

Keywords
cognition, thinking, hospitality, decision-making, consumer behavior, travel planning

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Kimberly M. Williams, Ph.D., is a teaching support specialist with the Graduate Research in Teaching Fellows program in the Cornell Center for Teaching Excellence. She is on the graduate faculty at Plymouth State University, where she teaches courses in cognition, philosophy, and research. She is also an educational consultant working with students and faculty to improve teaching and learning and teaches fitness classes. Prior to coming to Cornell, she has been on the faculty at Hobart and William Smith Colleges, Dartmouth College, the State University of New York Colleges at Cortland and Morrisville, and Syracuse University. She is author or co-author of the following books: *Keeping Kids Safe, Healthy, and Smart (with Marcel Lebrun), Developing Connective Leadership: Successes with Thinking Maps® (with Larry Alper and David Hyerle), Learning Limits: College Women, Drugs, and Relationships, and The PEACE Approach to Violence Prevention: A Guide for Administrators and Teachers*. Her forthcoming book, *Healthy Children, Healthy Minds,* focuses on improving cognition and the ways we develop healthy brains and minds in children.

EXECUTIVE SUMMARY

As magnetic resonance studies (fMRI) evolve, we will learn more about how the brain operates during consumer decision making. Until that time, social science research can assist with understanding consumers' thought processes, as in the case of this report, which focuses on consumer decision making in connection with travel planning. This paper examines the application of a cognitive framework that is currently used in education to better understand, address, and improve thinking skills, which appears to apply to hospitality consumers' decision making. Two pilot studies of trip planning, by graduate and undergraduate students, demonstrate the potential usefulness of this cognitive framework. Since so much of the cognitive processing involved in trip planning appears to occur unconsciously, bringing the thinking involved to our conscious awareness may improve the process for consumers. Using the pilot studies and personal experience, this report explains the framework's use for consumer decision-making and suggests ways that may help us better understand and address the cognition that happens as consumers make complex travel decisions.

After an early model developed in 1961 by Albert Upton, the model of eight forms of cognition examined here was formed more recently by David Hyerle. The eight forms of thinking are: **(1)** Defining in context, **(2)** Describing attributes, **(3)** Sequencing, **(4)** Causal reasoning, **(5)** Using analogies, **(6)** Comparing and contrasting, **(7)** Categorical reasoning, and **(8)** Spatial reasoning. Some of these forms of cognition appear to apply more strongly than others in trip planning, such as determining the context of the trip, describing and comparing attributes, and considering spatial or location issues. Not expressly included in the framework, but essential to an understanding of trip planning processes is the social context of the trip and those planning to travel. Moreover, since fMRI studies have shown that the brain is parsimonious and attempts to operate as efficiently as possible, any aid to decision making should be well received. A better understanding of these specific forms of thinking may allow those in the hospitality industry opportunities to create specific ways of streamlining and purposefully addressing consumer decision-making thinking processes more strategically. In particular, for example, those in the industry might consider ways to facilitate each of these forms of thinking at different stages of the trip-planning process.

Keywords: Cognition, thinking, hospitality, decision-making, consumer behavior, travel planning

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Although marketers in all industries have examined many aspects of consumer choice and decision making, there is no coherent theoretical framework that sufficiently explains the specific and discrete forms of conscious cognition or thinking processes in which consumers engage as they make their travel and booking choices. Cognitive imaging holds some promise, but the field is not yet sufficiently developed to shed light on specific thought processes. Education researchers have conducted much study of cognitive processes, but these studies have not been aimed at a consumer model. This report examines specific thought processes within a model of conscious cognition and applies them to the process that consumers use as they plan a trip. I believe that this cognitive model offers valuable insights for the hospitality industry's effort to understand consumers' choices.

The conceptual approach presented here melds the numerous common elements of education and the hospitality industry. Both are service businesses that teach people new things, help them solve problems, and make decisions. Consumers and students need (and want) to be educated about new concepts or gain additional depth on existing information. Both consumers and students are called on to engage in complex forms of thinking and to think through decisions which have numerous trade-offs or options. In resolving those problems, consumers and students sometimes use straightforward pathways of thinking, but often their logic seems circuitous and difficult to fathom. Marketers and educators alike seek to follow and understand students' and consumers' thinking processes, with a goal of purposefully offering information that is needed when it is needed. If we can better understand the specific kinds of thinking consumers are engaged in, and at what point in the decision-making process they are using these forms of thinking, then we could target consumers' thinking processes in more timely and purposeful ways in our marketing, web design, social media, and customer relationship management.

We know that consumers' and students' decision-making processes and behavior are driven by the brain or, more specifically, by the way the brain operates. Only recently have neuroscience researchers gained the ability to observe the human brain in action by noting which parts of the brain are activated by a particular stimulus. Thus, we are gaining a better sense of how our brains influence our behavior—and of particular interest to the hospitality industry—how our brains and our thinking influence our consumer thinking and decision-making behavior.

Blending Neuroscience with Social Science

Despite the desire to apply the findings of neuroscience to consumer behavior, we must be cautious in our interpretations of neuroscience findings, as the field is still in its infancy. Nevertheless, Christophe Morin argues that "neuromarketing" is "an emerging field that bridges the study of consumer behavior with neuroscience" that has been gaining ground since 2002.[1] At the same time he sees that "neuromarketing is clearly at an embryonic stage. Marketers are just awakening to the possibilities offered by unveiling the brain circuits involved in seeking, choosing, and buying a product."[2] He argues that using neuroimaging technology (specifically fMRI) we can see consumers' emotional responses, and this technology (as it becomes more widely available) will become even more popular among neuromarketing researchers.

Some areas of neuroscience have been well studied and supported. What is well understood is the power of affect or emotion in influencing cognition and decision-making. In their overview of neuroscience research, Hubert and Kenning pointed to the importance of emotion in consumer decision-making: "One important contribution of consumer neuroscience is the emphasis on emotions and their influence on consumer decision making. Consumers are no longer considered as completely rational, because emotions, unconscious and automatic processes, play a central role in generating behavior."[3] Neuroscience research identifies the areas of the brain that are used in these processes, including the reward and punishment systems and the prefrontal cortex—specifically, the ventromedial part that integrates emotions in the decision-making process. The research also indicates that this area of the brain may be responsible for the degree to which people are influenced by brand information.[4]

Neuroscientists such as Antonio Damasio and others have documented the power of the brain's limbic system

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[1] Christophe Morin, "Neuromarketing: The New Science of Consumer Behavior," in *Symposium: Consumer Culture in Global Perspective* (Springer Science+Business Media, 2011; http://www.academia.edu/969189/Neuromarketing_The_New_Science_of_Consumer_Behav ior (viewed January 14, 2014).

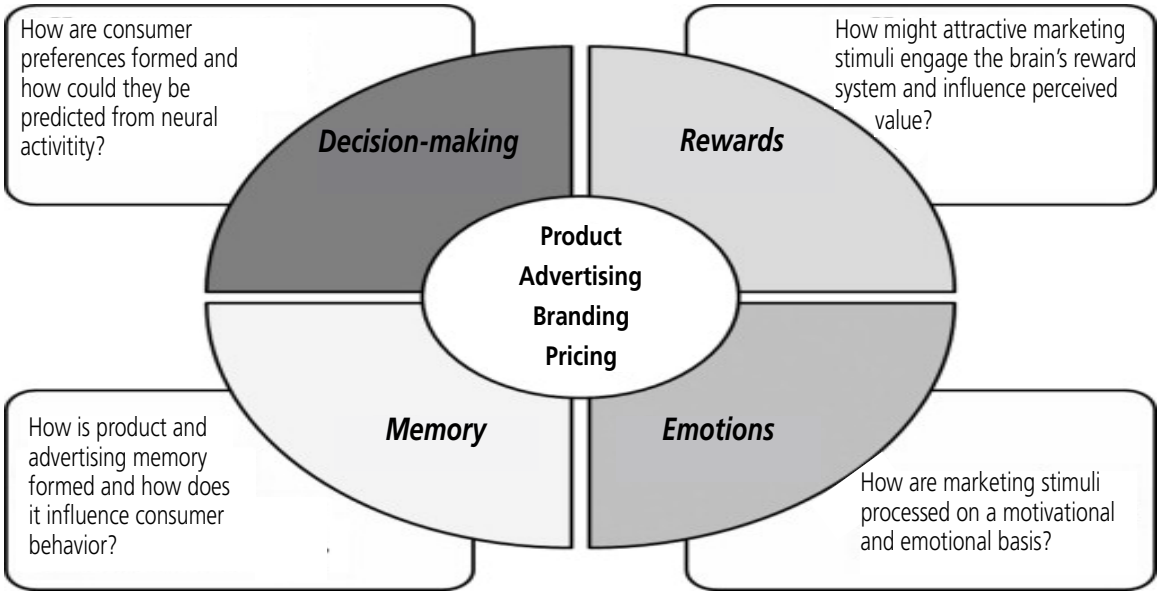
[2] *Ibid*.

[3] Mirja Hubert and Peter Kenning. "A Current Overview of Consumer Neuroscience," *Journal of Consumer Behavior*, Vol. 7 (2008), pp. 272-292.

[4] *Ibid*.

Exhibit 1

"Neuromarketing" framework



Source: Céline Solnais, Javier Andreu-Perez, Juan Sánchez-Fernández, and Jaime Andréu-Abela, "The Contribution of Neuroscience to Consumer Research: A Conceptual Framework and Empirical Review," *Journal of Economic Psychology*, Vol. 36, No. 6. (2013), pp. 68-81.

(emotional centers) in affecting learning and decisions. In a finding that resonates with marketing theory, neuroscience research has supported the principle that the stronger the somatic marker (emotional response), the stronger the memory.[5] Thus, as Daniel Kahneman shows convincingly, mood matters, and people in a positive mood "become more intuitive and more creative but also less vigilant and more prone to logic errors. …Cognitive ease is both a cause and a consequence of a pleasant feeling."[6] Together, these findings help explain why putting prospective consumers in a positive mood as they consider your product can be a helpful cognitive strategy and why having positive emotional markers associated with a brand helps with recognition and recall.

Research that compares decision-making processes between adolescent brains and fully mature adult brains using fMRI research provides clues as to why consumers' attitudes seem to solidify as they age. Researchers Abigail Baird and Craig Bennett found that adolescents try to reason out decisions that adults might consider to be no-brainers. For example, most adults would have an instant, visceral, negative reaction to the idea of swimming with sharks, as their brains instantly respond: "bad idea." Adolescents, in contrast, consider the possibilities and engage the part of their brain responsible for complex decision making to try to reason through this decision. Baird and Bennett found that some adolescents would consider jumping in with the sharks, saying, "maybe okay if with friends."[7] The inclusion of friends in this decision process depicts the important role of social influence on adolescent decision making—which marketers know does not entirely vanish with age or maturity. Since jumping into a shark tank represents a cognitively simp ler decision than most travel- or hospitality-related decisions, let's examine research that examines complex thinking.

As I said, neuroscience is not quite ready for application to tourism marketing, but it does provide useful clues. In 2013, the *Journal of Economic Psychology* published an excellent empirical review of 34 studies in consumer neuroscience. As shown in Exhibit 1, the authors focused on the following areas: decision-making, reward processing, motivation, emotional processing, attention, and memory,

[5] Antonio R. Damasio, *Self Comes to Mind: Constructing the Conscious Brain* (New York: Pantheon Books, 2010).

[6] Daniel Kahneman, *Thinking, Fast and Slow* (New York: Farrar, Straus and Giroux, 2011).

[7] Abigail A. Baird, Jonathan A. Fuselsang, and Crait M. Bennett, "What Were You Thinking? An fMRI Study of Adolescent Decision-making," Dartmouth College Department of Psychological and Brain Sciences, 2006; http://faculty.vassar.edu/abbaird/research/presentations/pdfs/CNS_05_ab.pdf.

all of which are clearly of interest to marketers.[8] These authors suggest that neuroscience may eventually be able to help us better understand how neural activity may predict consumer preferences, but we are not there yet. Instead they concluded that fMRI and other modern neuroimaging techniques "cannot replace traditional behavioral science methods and self-report measures."[9] Overall, these authors, like many studying neuroscience, believe that it is the "joint use of different methods within consumer research that will be essential for a more precise and thorough understanding of the different components of consumer behavior."[10]

Pairing Social Science Methods with Neuroscience Findings

Despite the embryonic stage of neuroscience research, we can take what researchers have found in the fMRI studies and pair these findings with those of cognitive psychology and human behavior research. Nobel prize winner Daniel Kahneman, in his book *Thinking, Fast and Slow*, has reviewed some of the vast literature on cognitive functioning as measured by observable behavior. One of his tenets (supported by rigorous and peer-reviewed research) is that the brain is basically lazy—or parsimonious—and it avoids hard work, perhaps to conserve energy. It typically prefers what he terms "cognitive ease," which I mentioned above in connection with emotions. This means that people making a decision will typically choose the path that is cognitively easiest.[11] Hospitality industry marketers who understand this principle simplify booking processes and provide as many decision shortcuts as possible, even as they provide as much information as consumers demand (notably, in the form of ratings and reviews). The goal is to reduce cognitive strain for people when they are thinking through complex decisions about their travel. Kahneman suggests the following strategies: maximize legibility, avoid complex language, use repetition (to increase familiarity), and make your message simple and memorable. Put your message into verse if possible, and make your product easy to pronounce.[12] This all makes intuitive sense, and is all familiar to those in advertising and marketing. What we now know is that research supports these principles, as we seek to better understand the nature of consumers' thinking when making complex decisions.

Another cognitive principle that Kahneman presents is that people are strongly loss averse. In a concept known as prospect theory, which won him the Nobel prize, Kahneman showed that when it comes to economic choices, people's decision processes focus more on avoiding a loss than achieving a gain, because a loss is felt more keenly than an equivalent gain. People also tend to place a high value on a change in the probability of success or making a good decision when they've started at a probability point that is high in the first place. So, people are more comfortable if they are going from 80-percent to 90-percent likelihood, for instance, than from going from 40-percent to 50-percent certainty.

Kahneman's findings suggest that not only will your would-be guests take the cognitively simplest option as they consider their travel purchase, but their booking decision will be based heavily on avoiding the possibility of a bad experience. Instead, they are likely to make purchase decisions that give them a high probability of success. Taken together, the evidence suggests that we need to keep our systems as straightforward as possible to simplify consumers' thinking process, and also to offer evidence that increases their confidence that they are making a good choice. To do this, we need to understand the nature of the discrete forms of thinking that consumers use in decision-making.

The analysis and understanding of how people make decisions is complicated by another aspect of brain functioning. Many cognitive scientists including Kahneman have discussed the notion that the brain functions both consciously and unconsciously. They believe that a lot of thinking, including consumers' travel decisions, takes place beyond our conscious awareness. Since we are unaware of some influences, uncovering unconscious influences using self-report is difficult. Even so, a robust body of research has examined the role of unconscious factors on decision-making. Bearing in mind that conscious thought processes are profoundly influenced by unconscious processes, this project focused on the conscious thought processes used by would-be travelers.

Eight Forms of Thinking: An Introduction to Hyerle's Framework

One of the most productive models of conscious thinking is outlined in a cognitive framework developed by David Hyerle, which comprises the following eight "cognitive universals":[13]

(1) Defining in context,
(2) Describing attributes,
(3) Sequencing,
(4) Causal reasoning,
(5) Using analogies,

[8] Céline Solnais, Javier Andreu-Perez, Juan Sánchez-Fernández, and Jaime Andréu-Abela, "The Contribution of Neuroscience to Consumer Research: A Conceptual Framework and Empirical Review," *Journal of Economic Psychology*, Vol. 36, No. 6. (2013), pp. 68-81.

[9] *Ibid.*

[10] *Ibid.*

[11] Kahneman, *op.cit.*

[12] *Ibid.*

[13] David Hyerle, *Visual Tools for Transforming Information into Knowledge*, 2nd ed. (Thousand Oaks, CA: Corwin Press, 2009).

Exhibit 2

Eight forms of cognition

Based on a model developed by: David Hyerle, *Visual Tools for Transforming Information into Knowledge*, 2nd ed. (Thousand Oaks, CA: Corwin Press, 2009).

(6) Comparing and contrasting,
(7) Categorical reasoning, and
(8) Spatial reasoning.[14]

These cognitive concepts follow the thread of research and philosophy from educators, psychologists, and philosophers from Socrates through Immanuel Kant to more contemporary researchers such as Jean Piaget and Albert Upton, each of whom have identified many of these thinking processes inherent and universal in humans. Hyerle's model builds upon the work of previous generations of thinkers and has been successfully implemented over the past twenty years for student learning and among administrators, as documented most recently in the book *Student Successes with Thinking Maps*.[15]

A key element of the cognitive analysis inherent in the eight forms of cognition which Hyerle discusses is the concept of the "metacognitive frame," in which persons consider everything that is affecting their thinking within the frame of reference surrounding each of the maps.[16] The degree to which we think about our thinking in travel planning is another area that is not well understood. Given the avoidance of cognitive strain that Kahneman suggests, however, it is unlikely that consumers are engaging deeply in metacognitive processing in such decisions. At the same time, the industry would find it useful to know what consumers are thinking and why they are thinking it.

As one way to gain a better understanding of the operation of specific thought processes that underlie travel decisions, the project described in this report applies the eight forms of cognition, which I depict in Exhibit 2, to common travel planning decisions. The remainder of this report explains the model and provides some examples of consumers' thinking that emerged from small pilot studies of people planning a trip, with an eye to examining the model's possible usefulness in the hospitality industry.

[14] *Ibid.*.

[15] Thinking Maps® is a registered trademark. See: David Hyerle and Larry Alper, *Student Successes with Thinking Maps: School-based Research, Results, and Models for Achievement using Visual Tools* (Thousand Oaks, Calif.: Corwin Press, 2011). The framework is based in part on the work of Albert Upton, who applied analogy and other fundamental thinking processes based on semantics, cognitive psychology, and problem-solving. See: Albert Upton, *Design for Thinking: A First Book in Semantics* (Palo Alto, CA: Pacific Books, 1960).

[16] Hyerle, *op.cit.*

Applying the Eight Forms of Cognition to Travel Planning: A Personal Example

As a demonstration of the nature of the eight forms of thinking, let's start with an example taken from my own trip planning experience (and that of my sister who was my co-traveler) as I booked a hotel for a trip to Boston for our two families. Note that throughout the process these eight forms of thinking are often concurrent and even overlapping. Moreover, they do not necessarily occur in the order given in the model above, because the forms of cognition are not necessarily sequential. After this example, I'll discuss the findings of two pilot studies involving cognitive elements of travel planning.

While trip planning using online search tools is often an individual effort, the process is fundamentally social, in that we are affected by numerous social influences throughout. In this example, the planning process was expressly social, since my sister and I engaged in considerable give and take. Although the nature of social influences is not the specific focus of the eight forms of thinking identified in Hyerle's model, social criteria influence each of the eight forms of thinking.

Defining in Context

The context of the planning effort I use as an example of planning and cognition involves a trip to Boston for Easter weekend with my family (my husband and two young children), where I would meet my sister and her husband and two young children to attend a concert at the Wang Center. The context of this particular example is fairly detailed, but a trip context may start out broad or vague, and it may shift during the planning process. Based on the context of this trip, we needed two rooms, preferably adjoining, with at least two queen beds, for one night, close to the Wang center, preferably in walking distance. When consumers consider the overall context early in their decision-making process, then industry planners can target this big-picture thinking at the outset. Search engines are designed to respond to a search with a broad general context, but they also can deal with a specific context.

Describing Attributes

Having defined our context and listed the general attributes we desired, our next step was to weight and further define these attributes, a process that can be captured by discrete choice modeling. This process highlights the importance of a trip context, since what matters to one traveler may not matter as much to another, and what may matter to one traveler at one time may not matter at another time depending on the travel purpose. My sister and I concluded that the most important attributes were: reasonable cost, location close to the Wang center, a pool for the kids, and two queen beds in each room. Assumed but never actually stated in our list of attributes were: safe, clean, good service, and easy parking. Because of the importance of identifying the attributes that consumers find important, conjoint analysis is a valuable tool, particularly since some attributes that are actually important are beyond consumers' conscious awareness. Consumers usually can list the attributes of which they are aware early in the search process, as they determine what is essential. Industry experts can address these attributes when consumers are considering them. Most search engines allow consumers to narrow their search based on certain attributes, albeit not on all possible attributes.

Causal Reasoning

As my sister and I discussed our desired attributes, we also weighed the relative importance of each one by considering the reasons why we desired that attribute. Proximity to the Wang Center offered numerous benefits, for example. I said, "If we can walk to the Wang we don't have to worry about taking a train or finding a cab really late at night. Then we won't be away from the kids and babysitter as long." She said, "If we have a pool then the kids can play right there at the hotel and they will be happy and not be as unhappy about us leaving them." Although I just gave examples of causal reasoning as we weighed the attributes, I must again note that some of our thinking may have been outside our conscious awareness—a certain level of room amenities, for instance. Regardless of the level of consciousness, understanding what causal connections travelers are making may help a hotel or travel firm appeal to their needs and wants.

Categorical and Sequential Reasoning

We used categorical reasoning to rate the relative importance of each attribute and thus to sort them. We concluded that price and a pool were important, but the other amenities were not so. We also engaged in sequential reasoning when considering the actual sequence of our activities on our night out: go to dinner, go to bars, and go to the concert. The sequence of activities was part of the overall context, and the sequence of actions important to our decision-making.

Once we had identified the trip's context, identified attributes, and analyzed the causes for choosing and prioritizing each attribute, it was time to conduct our search. Interestingly, our search involved a similar sequence of steps, starting with a basic Google search for "Boston hotels." Our search immediately became complicated as we were confronted with numerous categories of information: online travel agencies' discount booking programs (e.g., Expedia, Orbitz, and Tripadvisor), actual websites for Boston hotels (e.g., Boston Park Plaza, Boston Harbor Hotel, and the InterContinental Boston), and brands of hotels (e.g., Hyatt, Marriott, and Hilton).

Compare and Contrast

Because we needed to compare attributes for as many hotels as we could, for simplicity we both (independently) chose the OTAs' discount booking programs because they allowed us the opportunity to compare our desired attributes for different hotels. The primary attributes that are listed on the main search page are cost and ratings. The next step of our sequence of steps was to compare the key attributes of the hotels—comparing the most convenient and nicest (with the most of our preferred amenities) for the least amount of money. Expedia allowed a quick and easy way to sort hotels into categories based on what we wanted to pay.

Spatial Reasoning

Once we narrowed down our search by comparing prices and other essential attributes, we looked on Google maps to find out which hotel was the closest in physical proximity to the Wang center. Our other space consideration was that we wanted rooms that were as nearly adjacent as possible.

Categorical Reasoning Revisited

As we sorted our options into categories, we realized that one attribute trumped all others. Our hotel had to be close enough to the Wang Center. Other (secondary) categories were: hotels that were affordable enough and had most of the amenities we wanted; hotels that were a bit pricier than we wanted but had more amenities and were convenient, and hotels that were inexpensive but lacked several amenities we wanted. Once we set our categories by limiting our options to those in the first category, we used Google maps search to confirm a particular hotel's exact location in relation to the concert venue. We then chose a booking channel, in this case, hotels.com, which we used after viewing pictures of the hotel, its rooms, and the pool on the hotel's website. Although I've described this process as conscious, it's clear in retrospect that some categorization of the relative importance of attributes (e.g., price, location) happened unconsciously. That is, we know that price and certain amenities are more important than other attributes, although we may not always consciously be able to articulate these relative categorical ratings.

Analogies

Although we conducted as much due diligence as we could via the internet, we still were booking a hotel we had never seen. One thing that happened at this stage in the process was that we applied analogous thinking. That is, we reasoned that the hotel rooms we had booked were similar to others of the same class where we had previously stayed. Brains love analogies, in part because they simplify cognition. Jeff Hawkins, in his book *On Intelligence*, argues that our reasoning by analogies is at the heart of creativity and intelligence.[17] As we make decisions about a hotel, we naturally create representations of analogous experiences. Even when we think about how to go about our search for hotels, we think of analogous searches we have performed—although sometimes this is beyond our conscious awareness. If we can uncover these unconscious analogies and make them conscious for travelers, we can better understand the decisions they make. As occurred in the Boston hotel search, we need to engage in some kind of prediction using analogies, but typically grounded in our thinking about the context, qualities, and comparisons.

Sequencing—The Final Steps

The sequence of steps is embedded throughout these cognitive processes. Although I have presented our decision process as a series of discrete cognitive steps for purposes of explanation, that is not how the process unfolded. My sister and I went back and forth, changed our minds, and conducted numerous different searches to see what came up and what was available, and some cognition happens seemingly simultaneously. That said, the general sequence of steps was as described here.

Applying the Eight Forms of Thinking for Trip Planning

The above example, while useful, suffers from having a sample size of one. To examine the extent to which the booking process I used for the Boston trip is typical, I analyzed the trip planning experiences of two convenience samples, one, a group of 20 graduate students, and the other, 58 undergraduate students. For both, I qualitatively examined the conscious thought processes they reported when they went through booking a hotel for a trip.

Participants were asked to participate in the trip planning as part of their coursework. Given the situation shown in Exhibit 3, on the next page, they were asked to list the exact series of steps they followed when planning a trip—ideally a real trip, but otherwise a hypothetical expedition.

Research Objectives

The primary objective of this project was to determine the specific ways that informants used the eight forms of cognition in their trip planning to determine the possible utility for the hospitality industry. Using Hyerle's eight-part framework, I analyzed the students' cognitive themes and specific thought processes. Based on the eight forms of cognition, the analysis examined the specific and discrete ways the students used these forms of thinking. My focus was not to quantify the use of categories, but rather to determine some of the

[17] Jeff Hawkins and Sandra Blakeslee, *On Intelligence* (New York: Times Books, 2004).

Exhibit 3

Pilot Test Assignment

Plan a trip. It can be business or pleasure, but specify which one you choose. Ideally, make it a real trip you are planning, but if you must make up a fictitious trip, make it as real as you can (that is, go through the same steps you would if you were to actually plan a real trip). Copy the URL of every single website you visit and, next to it, explain why you chose that website. If you don't choose websites but use the telephone or other strategy, please write down your exact process. Please be as specific as you can with the steps, URLs, or other strategies you used, why you chose them (what influenced your choice), and in the end what you decided upon and why and evaluate the process (i.e., Was this a pretty typical process for you? Were you satisfied with your result?). Most important, think about what factors influenced your decisions throughout the process. Write down what factors influenced your decisions throughout the process. Then consider to what degree these factors influenced your process—that is, was price the primary decision? Location? If so, to what degree? Please write down everything you considered as you made your decisions.

ways in which the students applied each of these categories of thinking in their trip planning.

One thing I noted in these studies was the participants' use of online reviews of hotels. Researchers are still examining the effects of reviews, but they seem to have considerable power. Vermeulen and Seegers conducted a study of the use of online reviews and stated that "on average, exposure to online reviews enhances hotel consideration in consumers."[18] They further noted that awareness rose even when reviews were negative, and reviews overall had greater effect for lesser-known hotels. In contrast, Vermeulen and Seegers found that reviewers' expertise has only a minor influence on the weight given a review, albeit a positive one. One could argue that the phenomenon of reviews is a strong indicator of the social nature of travel decision-making.

Pilot Study 1: Graduate Student Teachers

The first study engaged graduate students, many of whom were working as full-time teachers at the time, as part of a fall 2013 graduate course at Plymouth State University, called "Theories of Learning and Cognitive Development." This pilot test was conducted to determine the extent to which the model held up in connection with travel planning. Note that these students had not formally studied the hospitality industry and had unknown but clearly disparate levels of knowledge regarding the trip-planning process.

Defining in Context

Certainly the trip context matters in decision-making. Most participants started by giving an overview of the context of the trip—where they wanted to go, with whom, who was influencing their decisions, why they were going, when, and how. One description shows how the attributes of the room fit the context of the trip:

> The Tall Timber has packages, is in a great area where there is a lot of outdoors stuff to do (swim, fish, ATV, etc.). It is in a rural area and has a comfy rustic feeling. I really like how we could book our own private cabin! I prefer this over an actual hotel room! I like privacy and not hearing my neighbors. In addition I would choose the cabin that has a fireplace and a hot tub to really set the mood and feel at peace."

Reading this participant's description, one also gets the feeling that the appropriate positive mood has been created and allowed her to feel comfortable making her decision.

Describing and Comparing Attributes

These graduate students applied classic hotel attributes—namely, price and location—and they compared various hotels on these attributes. They also considered one factor that did not apply in my Boston trip, familiarity. In keeping with cognitive principles, when given a choice between many options we will often choose the one that is most familiar, as occurred with many of the respondents' deliberations. One participant reported that "I chose this hotel mostly because of price. I had stayed there on previous occasions and it was satisfactory for my needs." With price not a factor, she chose the familiar. Although she was aware of familiarity in this instance, familiarity is often a factor that influences our "unconscious" thought process.

Brand recognition is based on the brain's preference for the familiar, which leads to a sense of cognitive safety and ease—consistent with Kahneman's work. As one participant wrote:

> I was booking a trip with a few friends to head to Florida over our February break. We are spending a few days in Disney before heading to Naples. We ended up booking right on the Disney site, because we knew we wouldn't have any problems with it. I know several people who have booked on Expedia or Orbitz, but we decided to just stick with the "name brand" site. When booking hotels, I typically go with the "name brand" or look at a particular hotel's site to see if they have hotels in the area I am traveling to.

[18] I. Vermeulen and D. Seegers, "Tried and Tested: The Impact of Online Reviews on Customer Consideration," *Tourism Management,* Vol. 1, No. 5 (2009); home.fsw.vu.nl/ie.vermeulen/vermeulen; retrieved November 7, 2013.

Familiarity has great cognitive power: "When booking hotels, I typically go with the "name brand" or look at a particular hotel's site to see if they have hotels in the area I am traveling to."

Once again, the primary attribute was price, and then other factors were compared, including familiarity, as in the above example.

Beyond the usual attributes of price and location, a few participants explicitly mentioned cleanliness, and some listed specific amenities such as food or parking or transportation. Nearly all participants listed the attributes they considered, even though they were not asked specifically to do so. As indicated in the eight-point cognition model, describing and comparing attributes were forms of thinking central to the planning process. The sequence of this consideration also fits the model specification.

Categorical Reasoning—Ranking of Categories

Participants' categorization and ranking of major attributes seemed to occur simultaneously with the consideration of attributes. This was not typically articulated, but certainly when discussing their strategies for narrowing their internet searches many described the ways they narrowed their consideration. This was generally based on major categories and what they felt was most important.

Causal Reasoning

Causal reasoning came into play in booking procedures and final attribute weighting. Some participants must have had trip planning experience. This was indicated by their comment that it would save them money to call the hotel directly because it would be cheaper than booking on a website. It is not always clear how they knew this—or how this caused them to call the hotel. Many who discussed calling felt that this strategy resulted in their getting better service and better prices. Consider this example:

> At this particular hotel you have to call to book reservations, and in the end I got a better deal and what we were looking for by talking to the person at the hotel. I was glad I called and had a conversation with her. She really made sure our needs were met.

As with the Boston trip, several respondents mentioned that they considered the effects of their decisions. Specifically, they chose a place that was slightly more expensive, reasoning that even though the cost was greater, it was worth it because they would be closer to their chosen destination.

Spatial Reasoning

Once the destination was set (e.g., Disney, Concord, the Outlet Mall, the Caribbean), the respondents narrowed down their lodging choices further by the physical location of their hotel relative to the spaces they wanted to visit (as occurred with the Boston trip). The balance between price and location was intriguing. Some were willing to be farther away from their destination for the right price or other important attribute, but most were strongly focused on location.

In many cases, social inputs had a great bearing on this balance. In the comment below, note also the importance of familiarity:

> After lots of discussion with family members regarding their preferences and price range, I looked up hotels on my phone using Yelp. I picked out two names that I knew, because we had stayed in both before: The Regency and The Homewood Suites. Both had good reviews, but a quick glance on Yelp reminded me that they were in different locations with different price ranges. Because we wanted to end our evening with shopping, I thought it would be best to stay at the cheaper option that is located near the mall, with a bonus being that it is located near a brewery for those who don't want to stay shopping for too long. I used the phone number on Yelp and called to book our rooms for one night.

Here we see that she narrowed her search based on price, then narrowed her consideration further based on familiarity and positive reviews (feelings), but location adjacent to shopping was paramount, as shopping was the context of their trip.

As in the example above, the few respondents that specifically mentioned travel to Disney cited brand loyalty in connection with dealing only with the Disney website, "I would probably use the Disney Hotels' websites rather than travel sites, although I would definitely take a peek at the prices at discount travel sites to compare the cost."

Pilot 2: Study of Undergraduate Participants

The evidence from the first study supported the notion that participants did engage explicitly in the eight thinking processes when making decisions about travel, but the number of respondents was small and many did not detail their thinking. For these reasons, I repeated the study with a larger group, fifty-nine undergraduates in an upper level class at the Cornell School of Hotel Administration, again in fall 2013. Students completed this project as part of a class assignment.

Defining in Context

The consideration of the context seems to happen early, if not at the very outset of thinking about the trip. Most respondents started their description of the search process by briefly outlining the context: "A couple of my friends and I are planning a ski trip for our school break trip in February"; or "I am planning a trip to visit my girlfriend." Others offered a detailed context:

> For my trip the first thing I decided is that I would plan a Las Vegas trip for this summer for when I return home with my friends. We will all be 21 for the first time, so I thought it would be the best thing to do before we all start working in the summer. All of my friends will be home around the 17th of May so I think the ideal dates to leave would be the 20th till Friday the 23rd. The reason is to avoid the weekend which will be more expensive because of Memorial Day.

Describing Attributes

Again, the classic trip-planning attributes surfaced in these students' descriptions, including location, price or affordability, convenience (including amount of travel time, and departure and return dates and times), proximity to desired location(s), amenities, and transportation availability. The following quote nicely summarizes how those attributes are weighed: "By scanning through the search results arranged by price, I was able to find a good package deal…the hotel was rated "excellent" by 450 reviewers, is centrally located, has clean and modern accommodations, has views of the city, and is nearby many of the attractions I want to visit." This respondent also reported relying on reviews to get more information about desired attributes. Some who were in the early stages of planning considered relatively broad attributes: "Weather: we wanted to go somewhere warm…tourist population: we wanted to go somewhere were we knew other college kids would be vacationing." Those in the later stages of decision-making would describe more detailed attributes such as "ocean view" or "ability to upgrade flight." Some did also reference the importance of loyalty rewards (frequent flier miles) and brands. As occurred in the Boston trip, the planners considered and weighed various attributes early and often.

*Location was paramount for many travelers, invoking the cognitive process of spatial reasoning: "*I thought it would be best to stay at the cheaper option that is located near the mall, with a bonus being that it is located near a brewery for those who don't want to stay shopping for too long."

Categorizing and Prioritizing

The different attributes were often ranked categorically—either explicitly or implicitly in order of importance, with price and proximity in their usual top position. Said one participant: "I am a price sensitive customer, which is why I always try to look for the best deals possible…because I do not want to spend money on something that could be potentially used on something, for instance, for leisure purposes." However, the prioritization process among categories suggested flexibility, as in this instance: "Although I am looking for an inexpensive hotel room, I also want to stay somewhere that is safe and conveniently located. I am willing to spend extra money for safety and convenience." Some also invoked familiarity, as they reported being willing to pay a little bit more for brand names. While some respondents were clear about categorizing their key attributes, others were not so clear. It seems that the industry may help consumers with categorizing and prioritizing key attributes relatively early in the process. Once again, I note that some of attributes are beyond our conscious awareness. For example, nobody in either pilot study expressly mentioned the attributes of the neighborhood and cleanliness, but there's no doubt that these factors were being considered at some level.

Comparing and Contrasting

The students reported comparing prices and other attributes, but in keeping with the principle that the brain seeks the easiest approach, most used OTAs and other websites or search engines for this purpose. For example, "I first

Causal reasoning was another commonly used cognitive process: "I was not extremely price-sensitive because I had certain dates and times in mind that worked for me and focused more on the experience rather than the value or cost."

searched for the price of flights to Park City to see if I would even be able to afford a trip there. Since there are so many different airlines to compare, Expedia allowed me to filter through all of them to find the cheapest fares."

Many respondents used multiple sites to check to make sure they found the cheapest possible options: "I typically compare my findings on the first search with other results from another site." Some respondents reported having their favorite (familiar) search engines for booking travel. For example, one said: "Kayak has always been my go-to website for hotel searches because of its many filters and vast searching options." There were a handful of participants who relied on travel agents to find them the best deals, an approach that involves even less work than using the internet. Those that did use the web were easily able to compare options throughout the process. Typically, however, once they narrowed their options early on, they did less comparing later in the process. Helpful though search engines may be, the number of attributes to compare is often limited (typically, price, location, and ratings). Perhaps by allowing consumers the opportunity to compare a wider variety of attributes, and by providing more information on these attributes throughout the decision-making process, a business can gain some advantage and consumers may be able to make better and more informed decisions.

The comparison process often began with a broad search, and the students would narrow their search by location (e.g., Disney or ski resort communities). Some had specific considerations that allowed them to home in on particular websites for booking travel. For example, if they had frequent flyer miles or were members of an airline club, they would go directly to those sites rather than compare: "We chose to book from United because they had convenient, reasonable round-trip tickets. More important, we are members of the United Club at the airport." If they had a particular destination planned they would directly book those at the location site (e.g., ski resorts). Some would simply start with a general Google search of that particular location.

Even those who used OTAs and search engines often would book directly with the hotel or airline. As one reported "I know it is best to make the bookings directly with the airline and with the hotel." Informants often would narrow their search by making comparisons based on basic attributes and then go directly to a source (specific hotel or airline).

Spatial Reasoning: Location and Mapping

Once again, location and distance were among the most important attributes. Respondents considered specific location issues that involved spatial reasoning: how far away from where I am will I need to go? And what is involved with me getting there? Some were specific: "I was going to go to New Zealand," or "I was going to Beaver Creek." Others were broad: "we wanted to go someplace warm." The attribute of location generally involved calculations of distance and the related cost (in terms of price or time).

As in the case of the Boston trip, spatial reasoning involved how far from the desired location the students could stay for a reasonable cost. Many participants used Google maps to identify particular locations near their destination, for example, skiers who wanted "closest proximity to the mountain." Another participant discussed how she enjoyed the ability to choose her cabin location on a cruise ship: "I can choose exactly where I want to be on the ship…I really like this."

Traveling involves spatial reasoning from beginning to end. Even if we do not consciously consider our physical selves in space, we often consider how to get ourselves to and from particular locations. Planning for travel, many folks will contemplate some of the spatial reasoning that they anticipate will be required, and this influences their thinking about the spaces where they will stay. This logic extends to room type and location. Although this was less often discussed (perhaps because it is one of the unconscious factors influencing decisions), some did consider the type of room and how many people could comfortably stay there. Maps, property diagrams, and room descriptions can facilitate consumers' spatial reasoning and promote their decision processes.

Sequencing

While not all of the students explicitly reported the series of steps they took in making their decisions, participants generally did consider the sequence of events of the trip itself—particularly those planning "real" travel arrangements rather than made-up ones. Among the sequences: where they would fly into, how they would get from the airport to the hotel, and how they would get from their hotel to their destination for recreation. For example, some respondents were really specific: "When I arrive at the airport I will take a cab to and from the hotel, which should be about a 12-minute car ride, according to Google maps." (Notice that this also illustrates the way that consumers used mapping programs to figure out their physical location and facilitate their spatial reasoning.)

Some discussed the sequence of their thought processes explicitly. For booking a flight, the typical process involved consideration of the dates of travel, destination, airports and flights, flight times, and cost of flights. One student enumerated her sequence of steps as follows: **(1)** Pick top locations, **(2)** Find a hotel or resort, **(3)** Choose location based on hotel or resort, **(4)** Book hotel or resort, **(5)** Find a flight, and **(6)** Book the flight.

Most others embedded their sequence of steps into a reflection of this type: "First I needed to figure out exactly what days on which this trip could occur so I looked at the academic calendar…once the bus information was gathered, I went to Travelocity to look for flights…" The respondents recognized that there were some sequences of steps required to plan their trips, but they often did not feel as though they were as linear sequential as those enumerated above. Many would go back and forth as we had done with the Boston trip, as they tried different search engines to make sure they were finding the best bargains for airfare and hotels. They recognized this back and forth consideration as their decision-making sequence.

Considering that the students who were more detailed in their planning considered the sequence of their trip more explicitly, one industry strategy could include offering consumers options to sequentially plan their trip and consider what assistance they will need at each step of the trip to help facilitate their thinking process.

Causal Reasoning

Some explicitly considered the causes and effects of their decisions. For example, one wrote: "I was not extremely price-sensitive because I had certain dates and times in mind that worked for me and focused more on the experience rather than the value or cost." In her analysis, that student realized that time was more important than price. Another's analysis concluded that to save money on airfare might mean compromising on time with family or at the destination. In this example the participant stated "tradeoffs for this [cheaper] option are missing Christmas with my grandparents…but I did not have to pay an extra $90.40."

Price was another important contributor to causal reasoning: "The trade-off for this [cheaper] option are missing Christmas with my grandparents…but I did not have to pay an extra $90.40."

Causal reasoning was evident among the few who related what they would do on their trip. For example, one participant expressly sought to enjoy local food: "Since I love food, I always scope out some restaurants to try before leaving for a trip."

Other students considered such issues as which airport to use, given that it's more difficult to find a back-up flight from a small airport if a flight is canceled, but it's often less convenient to get to a larger airport even though it has more travel options.

Finally, some respondents used causal reasoning to explain their brand loyalty. Booking with a brand they knew or trusted made them feel more confident or safer in their decision—clearly invoking both familiarity and loss avoidance.

Analogies and Relationships

The analogies offered by the students were neither obvious nor overt. Their thinking involved more comparing options than making true analogies. The following is an example of the kind of thinking that involves analogies or relationships:

> Since right now is already November, I know that booking a trip in the December dates will be more expensive than the January ones because it is coming up much sooner. Because of this, I have chosen to make my vacation after New Year's within the January 3 to 13 ranges. Knowing that trips are more expensive the closer they are to January 1, I decided

Exhibit 4

Use of cognition types in trip planning

Type of thinking	Use in consumer decision-process for trip planning	Issues to consider
Defining in context	Consumer considers the big picture of the trip. Who is going? Generally where? For how long? For what purpose?	Appears that this happens early in the process and is likely to be among the first cognitive strategies used. How do search engines handle the myriad of important aspects of context?
Describing attributes	Consumer considers specific descriptors and attributes, such as price, location, and amenities	In what specific ways can the hospitality industry help consumers identify their desired attributes and match their personal desired attributes with the attributes available at different stages of the planning process?
Categorizing	Consumer considers the relative weight of each of the attributes and also categorizes different attributes (e.g., cost includes all aspects of price, and convenience includes all aspects of convenience such as parking, ground transport, time, and so on).	How do consumers determine the relative weight of attributes and at what point in the process? How do they go about categorizing attributes? How might the industry categorize attributes for consumers to make the decision more streamlined?
Comparing	Consumer compares different options based on attributes, such as which is less expensive, has a better location, or offers nicer amenities.	How can industry professionals help consumers with the comparison process? Search engines allow ongoing comparison as part of the decision-making process: for example, comparing prices, locations, and amenities. Some search tools allow consumers to limit comparisons by price and location, but the comparative options are often limited—should the industry expand or restrict the opportunities for comparison throughout the search and consideration process?
Sequencing	Consumer considers sequence of steps taken to plan a trip, as well as the sequence of the trip itself: where will we go first? Next?	How does the hospitality industry address consumers' decisions about the sequencing of a trip? Or streamline the sequence of planning a trip? How might the industry work to make sequencing more streamlined and easy for consumers?
Causal reasoning	Consumer considers the causes and effects of possible decisions at each step of the decision making process and when making ultimate final decisions, including: What will happen if we stay here instead of there? Why is price so important? Is the price differential worth it?	How does the hospitality industry examine what the causal influences are on decision-making and at what point these decisions are made? How does the industry assist consumers with their causal reasoning in their planning process? How might they streamline this process and facilitate this for consumers?
Analogies	Consumer considers possible analogous experiences between and among experiences that were similar on some related factor—consumers make predictions using analogies. The degree to which this particular form of cognition is relevant and substantially different from describing attributes and comparing and contrasting them is unclear.	How does the hospitality industry use analogies to facilitate planning and to predict consumer actions?
Spatial reasoning	For consumers in hospitality this may include the physical space and layout of rooms, the physical location of a hotel, and its location in relation to other sites of interest, as well as airports and desired venues.	How does the hospitality industry specifically address consumers' spatial reasoning in their consumer decision-making behavior? Many search engines offer a mapping function to see physical location of hotels and virtual tours to see physical space of rooms. What other ways might experts in hospitality consider helping consumers' spatial reasoning?

on January 7 to January 12 for my beach getaway to Cancun with my sister before heading back to school.

So the analogy relates the price of the December trip to the price of the same trip in January. The relating factor is price (which was often the case for the participants).

A few respondents also made analogies between past trip experiences and presumptions about future trips. One suggested: "So this trip to Cancun in January will likely be like my trip to Barbados two years ago." We do tend to project our future experiences based on our past experiences, but analogy seems to be one of the least useful forms of cognition for travel planning.

Conclusions

Although the three examples given in this report outline the ways that the eight forms of cognition presented in the model might apply to consumer decision-making generally and to travel planning specifically, the fact remains that these pilot tests involved small convenience samples. These preliminary findings suggest that the eight forms of thinking are used to some extent in trip planning, and a few of them are profoundly used throughout the process. These preliminary indications suggest that further research would be warranted to examine more specific applications of the model to different aspects of the hospitality industry.

In all three cases (that is, my personal example, the study of graduate students, and the study of undergraduates), the thinking processes in planning a trip were quite similar. Without over-generalizing from qualitative findings such as these, the consistency in the findings suggests that this cognitive framework may be useful in understanding the thought processes that consumers apply when making decisions on hospitality industry purchases.

Exhibit 4 shows all eight forms of thinking and the ways they might be considered in consumer decision-making and some possible (non-exhaustive) considerations for hospitality industry experts and future research. If we can consider the many different points of entry into these thinking processes, we can possibly facilitate the process for travelers, so that decision making becomes even easier and more targeted to the precise kinds of thinking they are using.

For the hospitality industry, research on these eight forms of thinking may provide better understanding of specific forms of consumer thinking at different stages of the decision-making process, allowing the industry to better position products and information at appropriate points in the thinking process. Given the importance of categorizing and considering the relative importance of attributes, sophisticated search tools and information or product placement could facilitate consumers' weighing of these attributes.

Since it appears that consumers define the trip context at or near the beginning of their search, we can create tools that allow them to incorporate more important and essential aspects of the context into their information search and attribute consideration. Perhaps a wider variety of product placement could (and should) happen earlier in the decision-making process to allow consumers to develop the trip context.

Although social influences are not expressly part of the eight-point model, it's clear that they are important to consumer behavior. Individuals conduct their searches and make bookings within a social context. The broader social context is part of defining the context of the trip. As such, future examination of consumer thinking around "defining in context" as well as the seven other forms should include the social influences on thinking.

I believe that research will be fruitful regarding each of these forms of thinking and the specific ways they can be addressed and used in the hospitality field. At some point, fMRI research will catch up to this process and provide additional clarity regarding brain function. In the meantime, consideration of the thought processes involved in consumer decision-making, and the use of these eight forms of thinking as a way to focus the discussion can help provide a language and a framework for the industry to promote consumers' travel planning efforts. ■

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