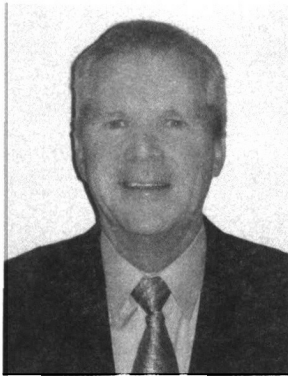


Executive Interview



The Father of Guestology: An Interview with Bruce Laval

Robert C. Ford, University of Central Florida
Duncan R. Dickson, University of Central Florida

Executive Summary

Bruce Laval recently retired as executive vice president of operations planning and development for the Walt Disney Company. He began his career in 1971 in the industrial engineering department at Walt Disney World in Orlando, Florida after graduating from an MBA program where he had specialized in operations research. One of his first major assignments was to justify the purchase of an additional monorail train to reduce wait times on the monorail system. He felt this would be a perfect application for a then-new analytical tool called computer simulation. The results of the simulation were startling, because instead of justifying an additional monorail train it showed the system capacity could only be increased by removing one train from the track. When his counterintuitive findings resulted in saving millions of dollars on an unnecessary new train, his reputation for applying innovative approaches to solving customer service problems was established.

Over the next thirty years, he continued to expand his commitment to outstanding customer service through the application of management science tools. In the late 1970s, while working on the planning of Epcot, he coined the term "Guestology" in order to explain the scientific approach used in the planning and design of Epcot. Disney has been long renowned for its guest centric focus and is considered one of the benchmarks for exceptional customer service. Guestology is literally the study of guests and represents the science and methodology that has helped Disney gain a worldwide reputation for service excellence.

Across his career, Laval held many positions including director of planning and development for WDI (Walt Disney Imagineering, Florida), general manager of Epcot, vice president of the Disney MGM Studios, and executive vice president of parks and resort operations for Orlando's Walt Disney World. In each of these positions he used Guestology's scientific approach to help create the Disney magic. A prime example was his invention of Fast Pass, which created the concept of virtual queues and revolutionized wait times in the industry.

Bruce is now an active consultant sharing his knowledge of Guestology with many organizations including Rockefeller Center, the Masters Golf Tournament, and Colonial Williamsburg.

As QUIS 10 was held in Orlando, a city that owes a large part of its worldwide reputation with tourists to the customer service success of Walt Disney World, it seemed fitting to the QUIS 10 guest editors to include an interview with the "Father of Guestology" as part of this special issue on services.

Authors: Every kid dreams of working for Disney, how did you wind up working there and what was it like to be part of this magic-making organization?

Laval: My undergraduate degree was in industrial and systems engineering. After graduating, I went to work at Cape Kennedy in the aerospace industry. It took me a year to realize I did not want to work in the aerospace industry for the rest of my career, so I decided to go back to school to get an MBA. The University of Florida had developed a new MBA program that emphasized the more technical side of management sciences, specifically developed for undergraduates in engineering. This was back in 1970-1971 and I took one of the first courses ever taught in computer simulation. I was so intrigued with the subject that I did my master's thesis on computer simulation -- optimizing the traffic light sequencing on a roadway system in Gainesville.

When I graduated in June of '71, I interviewed with Walt Disney World, which was scheduled to open in October that year. During the interview, which included a tour of the park and all the attractions, it was clear to me that Walt Disney World was one giant queuing application. I thought, what better place could I find to apply computer simulation and queuing theory and everything I've learned in my master's program? In addition to just being fascinated with the whole history of Disney and having grown up watching Walt Disney on TV every week, the fact that it so perfectly fit my educational background made it the ideal place for me to work. At the conclusion of the interview, they offered me a job, and I started working on the day the park opened in October 1, 1971. I was very excited.

Authors: How were you able to apply your knowledge of computer simulation queuing theory to Walt Disney World in your initial experiences?

Laval: One of the first projects that I was assigned to at Disney World was the monorail system. At the time, there were very long lines at the monorail station (45 to 60 minutes), and the intuitive solution was to add more monorail trains. My assignment was to perform an analysis to justify the purchase of an additional monorail train and increase the system capacity. I saw the project as a perfect opportunity to do a computer simulation study. I developed a simulation program for the monorail system and added an additional train to the system as part of the justification process.

To my surprise, the initial simulation run showed that the capacity of the system decreased when an additional train was added to the system. I decided to rerun the simulation

numerous times to check these results. I also reran it with a varying number of trains and found out that the system was optimized when you ran it with one less train. The simulation actually showed that when a sixth train was added to the current system the capacity went down by approximately 10%, and when one train was removed from the system the capacity increased by 10%. This was totally counterintuitive to what everyone expected or was thinking at the time. However, after analyzing the logic of the computer simulation, it became obvious why the results came out as they did. The monorail had a safety system, called block lights, that prevented one train from getting too close to another train. When you had too many trains on the track or beam at one time, they were intruding into each others' zones and were constantly being slowed or shut down by the safety system. It was just like a traffic jam. On the other hand, if you took one train off the beam, the trains were able to be spaced far enough apart to prevent them from intruding into the each others' zones. This allowed the trains to operate at their design speed of 35 mph instead of constantly starting and stopping.

When I presented my study results to management, their first reaction was this kid's nuts. How can you have more capacity with fewer trains? Although they did not understand computer simulation or believe the results, I was able to convince management that they should at least perform a test. I proposed that they operate and schedule the monorail trains based upon the results of the simulation in order to test the accuracy of the simulation model. I also assured them that, if the waiting lines ever got out of control, we could just abandon the test and no harm would be done. A day was chosen for the test and I used the computer simulation to create an optimal schedule for when and how many trains to use. I not only told them how many trains to have on the track each hour, but based upon the projected attendance and guest arrival rates for the day, I predicted what the resulting wait times would be throughout the day. The test was extremely successful in that it proved that a 4- train system could carry 10% more than a 5-train system -- and thus we did not need to purchase an additional train to increase the capacity.

However, what surprised management the most was not only did the simulation work, but the projected wait times were accurate to plus or minus 1 or 2 minutes throughout the day. In 1971, nobody at Disney had even heard of computer simulation. Computers were used only at the corporate level and of course there were no personal computers. To a lot of people this simulation seemed like magic. It got them asking questions like, "How did you do this?" How could you predict wait times like this?" Although they did not really understand it, the success of the monorail project led management to believe any problem could be solved with a computer simulation. For the next couple of years, I had numerous requests to perform computer simulation on all types of operating problems. It became kind of the catch all solution to many problems.

Authors: How long did they give you to do that simulation? How did you convince management to give you that much time?

Laval: They didn't. They didn't give me the time to do the computer simulation, because they didn't realize that this is what I was planning on doing. All they did was assign me the task of doing a study to justify the purchase of an additional monorail train. I simply felt that a computer simulation would be the best way of performing the required analysis and showing the

capacity impact of adding the proposed additional train. It did take a while to collect the data and write the program.

Authors: When you did the computer simulations, how long did it take to do this? It must have taken a lot of time to collect the data and build the model.

Laval: It was very time consuming back in the 70's, because you had to write the program yourself. There weren't any existing canned programs to use like there are now. Also, since the program is only as good as the data you put into it, you had to insure that the input data was very accurate. It's typical garbage in garbage out. First of all, you had to make sure that the probability assumptions are very accurate. You can't use a simple percent. You have to use time distributions.

For example, on the monorail simulation I had to observe the actual travel times of the trains from station to station. Of course, every observed travel time was different. I then had to develop a frequency distribution that replicated the probability of any given travel time actually occurring. You also have to realize that back in those days all the programming and data had to be inputted on punch cards. I must have had a stack of punch cards that was 2 feet high. It was also very cumbersome to do the initial simulation on the monorail system, because in the early 70's Disney World did not have computers that were capable of running the computer simulations.

Authors: Where'd you run them?

Laval: I had to rent time at night from General Electric who had a computer time share system. That's how we had to do it then. Now there are packaged computer simulation programs that are extremely user friendly and easy to program. They can be programmed and run in a small fraction of the time it took me to do the original programs.

Authors: After your success with this monorail study, what did you do next? How do you follow that success?

Laval: Because of the success of Walt Disney World when it first opened, attendance far exceeded initial projections. Throughout the park we needed to add capacity wherever we could to accommodate the larger than expected crowds. This was true for not only the attractions but also for food, merchandise operations, transportation systems and everything else in the park. I spent the first couple years doing studies throughout the park in order to determine where and how much capacity was needed in all areas of the operation. This information was used throughout the planning process for the major expansion of the initial phase of the Magic Kingdom, which occurred from 1971 through 1975.

Authors: How did you pick the topics for your studies of capacity? Did you seek out specific projects that you thought might be interesting or were you assigned them?

Laval: Every year, we spent three or four weeks during the peak summer period studying all aspects of the theme park operation looking for ways to improve the efficiency. This study was

what we called our annual utilization report. We looked at everything from attraction utilization to wait times, parking, food facilities, merchandise, and guest flows. We studied everything in the park to try to document both the current operation and identify opportunities for improvements. At the end of the summer when the analysis was complete, I'd give a presentation to management on the study results and recommend operating improvements.

Authors: Was this annual utilization report the tool you used to find opportunities to apply Guestology. It was a very useful tool for you, wasn't it?

Laval: Yes. It was the foundation of Guestology. It was the foundation because it created the first incredibly large database of statistics on every facet of the park operation. We had statistics on everything you could measure that define how guests behave in the park. From all the data, we were able to establish operating standards and planning criteria for almost all guest activities and behavior in the park. For example, we could project for any given time what percentage of the people in the park were in attractions, in food facilities, in merchandise shop, in restrooms, or just in circulation between activities. All that data got transformed into planning standards and planning criteria, which was then applied to the planning and design process of all of our theme parks.

Authors: You identified projects to tackle by doing the annual summer utilization report. Is this a report you invented or you inherited or were assigned?

Laval: No, this was one of my assignments starting that first summer. They had been doing these studies for many years in Disneyland to document capacity and utilization throughout that park. Since Disneyland had pretty much stabilized over the years, there wasn't much analysis of the results or startling information in their annual reports. When I did the first utilization study at Disney World in 1972, it was the first summer of full operation and there were lots of issues to be resolved. Park attendance had far exceeded the Magic Kingdom's design capacity and, as result, we had to identify areas of capacity deficiency and come up with recommendations on how and where to add the capacity. This was not limited to attractions, but also included food, merchandise, entertainment, and transportation. In addition to documenting existing capacity utilization, the Disney World Study contained a tremendous amount of sophisticated analysis that enabled us to identify the efficiency improvements and capacity additions that we needed. Over the years this report also allowed us to track our progress and evaluate the status of the previous year's recommendations. Because the study results for the first 3 or 4 years had such a major impact on the initial expansion plans for the Magic Kingdom, it was a highly anticipated report and received a great deal of management attention. We made these presentations each summer to the Disney World operating committee, which was made up of the seven senior vice presidents.

Authors: This must have been a fun time to be at the Magic Kingdom.

Laval: This was a lot of fun for a fairly young engineer and gave me a tremendous amount of exposure to upper management early in my career. The first few years I had a staff of only a few (i.e., 2 to 3) people that were helping me with the summer utilization studies. We had no computers. When you created a graph, you had to hand draw it. When there was a mistake, you

had to use white out to fix it or start all over. The report had graphs on every single attraction and food facilities. It was a lot of data and analysis all done by hand without the use of computers. I would get the study completed every year before the end of the summer and make a presentation to all the vice presidents when the summer season was still fresh in their mind. If it had come out in December, nobody would care. Budgets would already have been done.

In the initial years the study results were very dynamic. Our growth was so rapid that everything was changing greatly from year to year. However, ten years later everything had started to stabilize in the Magic Kingdom and there was not a whole lot of new information or insights coming out of the study. The studies continued on and were still important and valuable, but did not have the same high impact and importance as the early years. Looking back on it all--especially in the early years -- I only wish we had computers back in those days.

Authors: I remember you talked once about how you helped get rid of the ticket books at Walt Disney World with their individual "A through E" attraction ticket coupons. Was this a project you took on at your own initiative or did somebody say go figure out how to get rid of the ticket books?

Laval: No, that wasn't assigned because everybody felt the ticket books were very successful and in fact it was a major "Disney" tradition. Disney was famous for their "E ride" tickets. Calling something an "E-ride" even became part of the popular language to represent a really special event. You may remember that the first female astronaut, Sally Ride, actually referred to her experience as an "E-ride." The ticket books had shown themselves to be very effective at Disneyland in Anaheim. However, I discovered while doing an annual summer utilization study that the ticket books were not working the same way in Orlando as they were in Anaheim

Authors: Can you tell us more about how you used Guestology to analyze and solve the ticket book problem?

Laval: Sure. Back in the early days wait times were a very big problem across the Magic Kingdom. All the E-tickets attractions had extremely long wait times. In analyzing that data, I concluded that the wait time problems were being compounded by the ticket books. They created what I termed "false demand" on attractions. It wasn't true demand.

Let me give you an example of how the ticket book biased the natural attraction demand and created false demand for the "E" coupon ticket attractions. We had two attractions in the park; one called Country Bear Jamboree and one called the Mickey Mouse Review. Mickey Mouse is the main character for the whole park. Everybody came to see Mickey Mouse. Country Bear is a generic name. None of the characters in it were famous or known by guests. You'd think, given this difference in name recognition that the Mickey Mouse Review would have much longer lines than the Country Bear Jamboree. But Country Bear had an hour wait and Mickey Mouse Review had a relatively short wait. The reason was pretty clear when you thought about it and knew how our guests used the ticket books. The Country Bear Jamboree was an E-ticket and Mickey Mouse Review was a C-ticket. When guests came to the park and bought ticket books, they were getting, as I remember: 4 E tickets, 2 or 3 D tickets, 2 C tickets, and one B and one A ticket. Those coupons then created the demand for the attractions in each

category. There were 4 E tickets and only 2 C tickets, so there were twice as many “demand units” to see E ticket attractions than C ticket attractions.

To make matters worse, I realized that people coming into the park used the ticket books as their guide book. Printed right on each ticket coupon was the price of that ticket, which in turn told our guests what the attraction was worth. The E tickets were worth \$.90, D tickets \$.75, C tickets \$.50, and A tickets only \$.10. As an uninformed guest, given that information, what are you going to do? You say, “Well I’m going to get my money’s worth. I don’t want to waste my time in the morning on a \$.50 ticket or a \$.10 ticket -- I’m going to get my \$.90 worth.” Therefore, everybody spent the first three or four hours of the day trying to use all their E tickets because they were worth the most money. That’s why you had very long lines at Country Bear Jamboree (along with all the other E attractions) and little or no lines at the Mickey Mouse Review. It appeared clear to me that this imbalance in wait times between the two attractions was caused by the “false” demand created by the tickets books. Country Bear and Mickey Mouse Review are just examples of the false demand created by the ticket book – the same was true for all E attractions.

My theory was if you eliminated the ticket books you would eliminate this false demand on the E ticket attractions and spread the demand more evenly out among all attractions. Without the tickets to drive guest demand to the “E” ticket attractions, all attractions should look equally attractive to our first time visitors. Without the demand bias created by the ticket books, Mickey Mouse Review would sound more appealing than Country Bear Jamboree. What made this even better for guests is Mickey Mouse Review also had a larger capacity to help absorb the demand.

Authors: What else did you learn from your study of the ticket books?

Laval: We also learned that guests were not visiting some of the best attractions simply because they were listed as “free” in the ticket book. We had, for example, three major high capacity attractions, Eastern Airlines’s “If you had Wings”, Monsanto’s “America the Beautiful” and GE’s “Carousel of Progress.” They were free attractions only because they had corporate sponsors. However, they were listed in the ticket books as “Free” after the “A” coupons which were valued as only \$.10. This gave our guests the perception that they were not very good, because they had no value assigned to them. Carousel of Progress was one of the most popular attractions in Disneyland, but in Disney World it had little or no lines.

The only difference was that in Orlando the ticket books created the misperception that these “free” attractions were of lesser value than all the other attractions. To make matters worse these three free attractions were actually E-level attractions with very high capacity and were greatly underutilized. Once again, I felt that by eliminating the ticket books, not only would we spread guest demand out equally across all the attractions, but we would spread them into the three underutilized / high capacity free attractions which in turn would significantly reduce wait times in the major E attractions.

Authors: Did you use simulation for this analysis?

Laval: I didn't have to use a computer simulation, because the analysis could be performed with simple mathematics. You know exactly what the previous "false" demand was based upon, how many E tickets were sold in the park each day. When you eliminate the bias from the ticket books, you are then able to redistribute the demand based upon natural attraction appeal. Therefore, this was more of a simple mathematical solution versus computer simulation.

Authors: Was this a tough sell for management? How did they react to this?

Laval: When I first presented this idea to management, it was totally contrary to accepted convention at Disney and especially since at Disneyland the ticket books were very successful in controlling demand. Management assumed that if it worked at Disneyland it would work here. But I pointed out to them that there was a reason it worked at Disneyland, but not at Walt Disney World. Disneyland had extremely knowledgeable guests -- approximately 80% percent of its business was from local residents who visited the park regularly. People had been there dozens and dozens of times over the years and knew exactly where they wanted to go. People wanted to go to certain rides, like the Matterhorn, and wanted to ride them time and time again. They created the ticket books to restrict the demand (and prevent repeat ridership) on those most popular rides by giving people a limited number of tickets in each category.

But in Florida, 80% of the attendance was first-time visitors. Most of our guests had never been here before. Even our repeat visitors would come back only every few years versus Disneyland's multiple times a year. Also, Disney World and Disneyland were demographically very different. Much of the excessive repeat ridership in Disneyland was caused by teenagers from the local market who were visiting in groups without their families. On the other hand, in Orlando there were very few unescorted teenagers -- with the vast majority of visitors being family groups. Consequently, whereas in Disneyland the ticket books were very effective in preventing their very knowledgeable guests from riding the same rides over and over -- in Disney World the same ticket books were artificially directing our far less knowledgeable guests to the "E" ticket attractions.

Although my argument was greeted with much skepticism by management, because of the success and long tradition at Disneyland, they agreed to a test -- where on one day we would offer this special promotion that would allow guests to purchase a fixed priced ticket that would give them unlimited ridership on all attractions for the day. We could then compare the attraction utilization and guest distribution on the test day with a normal control day. The test day was selected and preparations were in the works when the company president found out about the test. He strongly opposed the idea and immediately canceled the test. I found out later that the reason he felt so strongly was that he was the individual who early in his career had developed the idea of ticket books at Disneyland. This tabled the idea for a while, but when Epcot opened it was decided to offer a ticket with unlimited rides for one price. It proved to be extremely successful at Epcot -- and, as a result, we were able to convince management to try a test at the Magic Kingdom. The test results were exactly as predicted. The wait times were reduced at all of the major "E" attractions and utilization went up on the previously underutilized attractions -- especially the three major "free" attractions.

Another reason why management initially worried about eliminating the ticket books was they thought that the ticket books restricted how many attractions people could see in a day. They worried that if they saw 3, 4, 5 or more attractions each day we wouldn't have enough capacity in the park to meet that surge in demand. But, what they didn't realize is that what really limited the number of attractions people saw in a day was the fatigue of being in the park for so many hours. People didn't stop going to attractions because they had seen them all. They just got exhausted at the end of the day. When we went to the unlimited ride concept, the ridership only went up very slightly, less than one additional ride per person. Yet, the guest's perception was that they were getting a much greater value because they had unlimited access to all attractions with no arbitrary limits. The perceived value went up greatly even when we charged \$2 more per person for the unlimited ticket. It also turned out to be a good marketing tool.

Authors: When you made your presentation, did you have to include the revenue projections that would be changed as well or did you just focus on capacity?

Laval: No, the initial reason for testing the concept was to reduce the long lines at the "E" attractions, to better redistribute the crowds, and to increase attraction utilization. However, guest surveys made during the test days showed that guests did perceive a greater value for the unlimited ticket.

Authors: You did the monorail study in '72. And you are making presentations to the board in your first years, making recommendations based on the quantitative analysis tools you brought to the company. As a young engineer, how did you go about getting management to listen to you and your ideas?

Laval: You have to realize that Disney at that time was a small, very informal company. It's not what is today. It was easier to get people's attention -- you did not have to deal with multiple layers of management or multiple committees -- you could get all seven senior operating VP's into one small conference room. Also, these were high profile projects at the time -- buying a monorail train in 1971 was a major capital investment and saving that much money got people's attention.

Authors: How did you convince Disney management to buy into bringing this scientific approach to hospitality? That's really what you're talking about both in using computer simulations and the sophisticated analysis provided in your annual summer utilization reports.

Laval: There's no question that initially there was a lot of skepticism on what I was doing. The operators would ask how can you do these things on computers and predict all this when you have no operating experience? Back in those days, all the management people basically came up through operations, and I'd never worked a day in the parks. I was able to break through these barriers by first finding a person in operations that I could work with and partner with. I also always took the position that, although you may not agree with me, it is at least worth a test to prove or disprove a concept. All of my major breakthrough projects were only accepted and implemented after successful tests.

Tests allowed me the opportunity to try something controversial while eliminating threats to the status quo and the people who created that status quo. You're giving them an opportunity to prove that they're right. You're saying this may be right or it may be wrong. If it's wrong and you are right, then no harm done. Fine, but what if it does work? I also tried to use a low key approach, I always made sure it didn't sound like I'm right and you're wrong. Even though I was 99% sure what I was suggesting was going to be successful, I figured the best way to get management to try something was by testing it. This is what happened with Fast Pass.

Fast Pass originally took on one of those sacred cows. Nobody believed that you could successfully have a reservation system for attractions. Everyone had dozens of reasons why it would not work. There was a tremendous amount of skepticism. The only way I was able to convince them would be with a series of tests. We started out small, collected data, and showed the results. We learned from each test and continued to tweak and refine the concept. After a series of 4-5 small controlled tests, we optimized the system and developed the final prototype for one last test. The final test was very successful and validated all the projected benefits of the Fast Pass system. It was a slow, step by step seduction -- convincing management through a series of small tests. I think that's an approach that works very well and particularly on these controversial issues where we were offering counterintuitive solutions.

Authors: We have used the term "Guestology" several times. Can you tell us where the term came from and why you invented it?

Laval: Sure. During the time I was working on the Epcot Project Development team in the late 1970s, I received many requests from management to make presentations on the planning process used to design Epcot. They were especially interested in the methodology we were using to develop all of the operating standards and planning criteria. My presentations were supposed to give an overview of all we had learned over the years of studying our guests and how this information was being applied to the design of Epcot. Each time I was asked to give a presentation they would ask me for a simple title they could use. So, I created the term "Guestology" to serve as the title for my presentations. I felt it represented the scientific approach we were using in studying the behaviors of our guests. I started my presentations with a formal definition of Guestology -- "the scientific study of the behaviors, needs, and expectations of the guests and how to use this information to optimally design and manage a theme park." Everyone loved the term. It is now part of the Disney language.

Authors: How did you actually use Guestology during the planning and design of Epcot?

Laval: Probably the best example of how guestology and computer simulation can be effectively used in the planning process was during the design of Epcot. In order to help make critical planning decisions related to the "location" and "amount" of capacity required for all operating facilities in the park, I created a comprehensive computer simulation model of Epcot. This was an extremely large computer model for the time and took months to develop. The model contained all the operating facilities within the parks and was able to simulate how guests spent their time and move around the park during a full operating day. For example, we took a design day, which might be 50,000 people, and entered these 50,000 people into the computer model at an arrival rate that replicated the known standard guest arrival rates. We were then able

to process each individual guest through the model of the park over the full course of the day based upon “demand factors” and “guest behavior” standards we had established through our intensive study of guest behavior. These standards were largely developed from the data base established from the summer utilization studies that we talked about earlier.

The simulation model replicated the way guests make their decisions as they moved about Epcot. There are basically only six choices guests can make. If they are leaving an attraction, for example, they can decide to next go to another attraction, to seek out a restaurant to eat, to stop and shop at a merchandise shop, to view area entertainment, go to the restroom, or to just stop for a break or rest. We knew from our research what percentage of the guests will do each of these activities at any given time of day. The probability of what they do next we knew is a function of what time of day it is and what activities they have done up to that point in their day. Therefore, our simulation model was designed to replicate the decision making process that a guest makes every time they exit a attraction in order to determine what they are going to do next. For example, we knew from our studies what percentage of people would choose to eat at various times during the day. If it is ten o'clock in the morning when our simulated guest exits the attraction, we know the likelihood of that person choosing to eat is very low. Therefore, guests exiting attractions at 10 am were given a very low probability of going to a restaurant, and proportionately higher percentages for doing the other activities. On the other hand, if it is 1 pm and they have not yet eaten by this time, then the likelihood is very high that the guest exiting the attraction will decide to go find something to eat before visiting another attraction or doing anything else.

This same thought process is applied to all decisions a guest could make in Epcot. This means the model used multiple series of probabilities that varied by time of day and by what activities the guest had already performed in order to determine what activity the simulated guest would chose next. At the end of a simulation run for an entire day, we could project utilization rates for all facilities and trace guest flow patterns throughout Epcot. We knew what the demand and percentage utilization we would have on all the individual attractions, restaurants, merchandise shops and even bathrooms. We could also project what the wait times would be based upon the design capacity of the facility. This model was very helpful during the planning design process – because if we found out in the simulation that there was a problem (for example, a particular attraction or restaurant had very long waits), then we knew that we needed to add more capacity to that attraction or more seats to the restaurant before we ever built the park.

Authors: Did the simulation show you anything that you hadn't expected?

Laval: The biggest surprise we discovered using the simulation was the demand for the largest fast food restaurant we built in Epcot - Odyssey restaurant. The designers located it right between Future World and World Showcase. There was a bridge that connected the two and everybody moving from Future World to World Showcase had to go across this bridge. We put this restaurant right next to that bridge, because it was really at the center of the park where all the traffic went. However, the computer simulation showed that it would only have 25% utilization. This was a shock to everybody including me because I was part of the initial meetings where people said, where should we put this large restaurant? We all agreed that

putting it right in the middle between Future World and World Showcase was an obvious location. When I got the first results of the simulation run, I thought there was a bug in the program. I thought there must be a mistake because this can't be true. Then I went back through the simulation logic in the model to see how guests had made their decisions and to see why people were not going to the Odyssey restaurant. After thoroughly going through the model's logic, I realized that it was correct. I discovered that most people during lunch time were located in the east and west side of Future World (where the largest capacity attractions were located). When people were making their decisions at 12 noon as they exited the attractions in Future World a certain percentage were assigned by the model's decision rule to eat. What they did next was to choose fast food or waitress service.

For the percentage that would choose waitress, the model allowed them to choose the location based upon food preference (such as Italian, Chinese, Mexican, etc). These people won't necessarily go to the location closest because the one that's closest might be Japanese and the model has chosen Italian based upon higher preference and assigned probability. But with fast food, their decisions are based on choosing the closest location (since most fast food facilities offered very similar menu options). The problem was that everyone exiting the six largest attractions in east and west Future World, who were assigned by the simulation to go to a fast food restaurant, had to walk right past two large fast food facilities located in the center of Future World's Communicore before even getting to the World Showcase bridge. Since every one of those people that the model assigned to fast food got sent to the closest fast food location, nobody from the Future World side of Epcot ever got to the Odyssey Restaurant.

The model clearly identified that this was a problem. We had this large restaurant facility under construction and it was going to be totally underutilized. The model predicted the 25% utilization -- I remember that number clearly. We made a presentation to management a year before Epcot opened pointing out the problem and recommending that another smaller bridge be built connecting the restaurant directly to the east side of Future World -- which would provide a more direct route to the Odyssey restaurant without having to pass by the two other large Communicore restaurants. They agreed with the results, but no longer had enough time in the construction schedule to make a change before opening. However, they did agree to design the connecting bridge -- and, if after opening, the simulation model's predictions were correct, then they would immediately start construction of the bridge. They figured if your simulation is right, we'll build it immediately after opening. If it's not right, at least we saved the construction of the bridge and we only spent the cost of design.

When we did the first utilization study right after opening, the actual utilization for the Odyssey Restaurant was 25% -- exactly what the model had projected 12 months before opening. This was a very impactful validation of the whole simulation process and demonstrated what an effective tool computer simulation can be during the planning process. In addition to accurately predicting the performance of the restaurant -- the amazing thing is that the simulation model, like the monorail study, had again given us an answer that was 100% counterintuitive -- every planner/designer that worked on Epcot looked at that master plan and agreed that the planned central location was the best location for the Odyssey restaurant. Construction on the bridge was started immediately and when completed it did help increase utilization of the restaurant.

Authors: And now Odyssey is closed?

Laval: Yes. Now Odyssey is closed. They use it for conventions and special events. The additional bridge definitely helped increase the restaurant utilization, but it still was not as desirable a location as the other existing fast food facilities. If the simulation model had been completed earlier (before Odyssey construction) the best solution would have been not to build the restaurant and just simply increase the size of the other better located food facilities.

Authors: We heard that there was some debate over the locations of Epcot's two parts, Future World and World Showcase, with some arguing that they should be reversed in where they are now physically located. Were you part of this debate? Did this have any impact on the decision to give Future World an early start and delaying World Showcase's opening until later?

Laval: I actually fought that and lost. I wasn't the only person. There were a few of us on the design team who actually tried to get it changed around. World Showcase with all the food and merchandise should have been at the entrance, and Future World with most of the attraction capacity should have been at the back. World Showcase should have been the "Main Street" equivalent of the park -- where you have the majority of shops and restaurants which people tend to seek out at the end of the day as they exit the park. Ideally, Future World should have been at the back of the park, since it would have drawn everyone all the way back into the park where all the big capacity attractions were. Then at the end of the day, you would be able close down Future World earlier and leave World Showcase open all evening to cater to the late night demand for shopping and dining. Right now it is totally backwards. World Showcase still does stay open late every night -- but now people have to exit through a deserted Future World. We argued this position with management -- but there was a major political hurdle that prevented this from happening. Epcot was being largely financed by the corporate pavilion sponsors in Future World and the first sponsorship agreement signed guaranteed that the company's pavilion would be located at the front of the park near the entrance.

Authors: One of your jobs was opening VP of Disney-MGM. Did you use what you learned at Epcot with the opening of Disney-MGM?

Laval: Yes, sure. When we started the planning for Disney-MGM Studios, I was assigned to head up the project development team. In this role, I was essentially the owner (operation team) representative responsible for providing all operational planning criteria and operational input to the creative design team -- to insure that whatever is designed satisfies all the various operating requirements of the park.

Authors: Did you build a simulation of Disney-MGM? Or did you not think it necessary?

Laval: We had a simulation but, not anything as sophisticated as what we did at Epcot because it was a more clearly defined project. Epcot was something Disney had never done before. We had to do the computer simulation to analyze a park design that we had never done before. There were no existing analogs to draw from. We weren't using traditional Disney attractions. We were doing mega attractions. Each attraction was like a land unto itself. In the Magic Kingdom,

a major ride like Space Mountain has approximately 2,000 per hour capacity – but the guest is on the ride only a couple of minutes. On the other hand, in Epcot, we were building major pavilions that may have the same 2,000 per hour capacity, but the guest is staying in the pavilion for 45 minutes to an hour (like the Land Pavilion). Although they both had technically the same hourly capacity – the true value of the capacity (in terms of supportable attendance) is much higher for an attraction that occupies the guests for 45 minutes versus 2-3 minutes. Therefore, the capacity value of an attraction is not only how many guests you carry per hour, but how long you are occupying the guests' time.

For example, when guests get off Space Mountain after a couple of minutes they are back in the park placing more demand on the other attractions, which requires more attraction capacity. However, if you are still in a pavilion like Epcot's Living Seas for another 45 minutes you can't be back out in the park placing additional demand on the other attractions. Therefore, you need considerably less attraction capacity. When we started planning for Epcot, the Imagineers (designers) were trying to apply the same capacity standards for the Epcot attractions that they had used in the Magic Kingdom. The Magic Kingdom had an hourly attraction capacity of about 65,000 guests at the time. The Imagineers initially argued that Epcot had to have approximately the same hourly capacity.

I said no, that is not true. Because of the "time value" of the Epcot capacity you needed substantially less total hourly capacity to accommodate the same level of daily attendance. The computer simulation proved the "time value" concept of capacity. It processed people through all the attractions/pavilions visited during the day, not only based upon their capacity, but also based upon their length of stay in the pavilion. I was then able to run the simulation at various different levels of capacity and showed that substantially less capacity than originally planned was necessary to accommodate the planned design day attendance. Getting back to your original question – the concept of the "time value" of capacity was well established and accepted by the time we were designing Disney MGM Studios. We therefore did not have to model the park to test unknowns. We were pretty much able to use the established planning criteria and design standards that were well established by that time.

Authors: How much carry forward was there on the ideas you invented or created onto subsequent projects either MGM or even EuroDisney or whatever they're doing today? Do you see the connection there?

Laval: Of course, the industrial engineering department has evolved since I left. They are probably one of the most sophisticated industrial engineering groups in any company in the country. Today there are well over 50 people in it continuing the work that I helped start. This compares to only three IE's when I was first hired. All three of us were in the maintenance division at the time. I was the first one to really break outside of the maintenance responsibility and redirected the focus of the department to primarily serve all the operating areas of the company. Over the years, we hired some great people into industrial engineering that have left their mark on the company. There are now numerous IE's, who have progressed up the ladder and hold key positions in all areas of the company. They all help continue the Disney tradition of using Guestology.

Authors: How did Guestology change the way that Disney operates?

Laval: Disney was always extremely focused on the guest. It has always been world renown for its exceptional guest service. That is a tradition that goes all the way back to Walt Disney himself and Disneyland. What guestology did is provide management with more analytical tools and more sophisticated information, which in turn enabled them to make better informed and educated decisions on how to improve the guest experience.

Authors: Do you see any applications of Guestology outside of the hospitality industry?

Laval: Oh yes. Everywhere.

Authors: Can you give us some examples of how Guestology can be used by those besides hospitality and theme parks?

Laval: Guestology can be used by any company that provides a service to its customers. Take a supermarket for example with long lines at the cash registers. Everybody knows how people get frustrated when they have to wait for long lines. Yet, supermarket managers appear to be oblivious to the problem – they wait until the lines get out of control and only then open up additional register lanes. They treat the lines like they are random events that they cannot control. Lines just appear and disappear as if by magic. Although they must use some demand input to make up employee schedules, they appear to make little effort to manage the lines in real time. Their approach to line management appears to be totally “reactive” versus “proactive” -- they feel they can just add people when there is a problem instead of planning and scheduling people correctly so there is not a problem in the first place.

You could use Guestology to solve this problem very easily. You could know exactly how many people are walking through the front door every five minutes (with electronic counters). You also could predict very accurately how long the average person spends shopping before checking out. There is a very predictable time lag from the time they walk through the door to the time they get to the cash register. I’m sure that if they took the time to measure their customer behavior, they would come up with a unique set of “length of stay” distributions for every hour of the day for every day of the week. Then all you need to do is apply the projected customer length of stay for the given day and time period to the arrival rate being monitored at the entrance (via the electronic counters) to know exactly how many people are going to be coming up to the registers at all times throughout the day. For example if you have a surge of 200 customers come through the door between 1 pm and 1:05 pm and the average shopping length of stay for that day and time period is 20 minutes, then you know that the demand on the registers between 1:20 pm and 1:25 pm will be 200.

You would then also know, based upon your average processing capacity of the registers, exactly how many registers you need open to accommodate the surge of people coming through the door. If the number of registers required is more than you currently have staffed, then you still have plenty of time (20 minutes) to move more staff over to the registers before the long lines start to appear. Therefore, instead of the manager running around saying we need 2 people on register 3, because the lines are all backed up, he would have that person show up 10 minutes

earlier and be logging on and ready to go before the lines began to form. It seems simple to me to apply Guestology to make these lines go away. I'm amazed that I haven't seen anybody do this.

Authors: What was the most interesting challenge you faced in implementing your ideas? Did you have something that didn't work?

Laval: I tend to forget about those that didn't work. I'm sure there were some but I can't remember any. The data and research were so solid that surprises were very infrequent, other than surprises like I learned on the Epcot simulation model, because they pointed to a conclusion that you didn't expect. But the science still works. It works because it points out what you didn't expect. That's what makes it great because it surprises you. It provides insights and discovers things that intuitively you wouldn't have figured out yourself.

Authors: What lessons have you learned? What would you tell another manager about how to use guestology?

Laval: You've got to always be willing to step out of the box and test controversial things. Take on the sacred cows – question them and see if there is a better way. However, don't be judgmental. Don't say, "I know this will work, or this is a better way to do it, or I'm smarter than you are." You need to put out propositions and theories and hypotheses and then be willing to set up formal tests to prove or disprove them. If you want to get things accomplished, if you want to sell your ideas, it's the best way to win people over. You also need to partner with the people you are working with and make them part of the solution and never, never make them look stupid.

Authors: Do you find yourself more successful when you went to management and you not only had proposals or ideas that should be investigated but you also had answers because you'd already investigated them? Or were you more successful when you went with ideas that ought to be investigated with proposals on how to go about investigating those ideas?

Laval: When I went to management I had a theory and a proposal that I felt would be beneficial. You had to find a way to sell it to management. The point is that it is a selling process. You can't go in to management and tell them that they are wrong the way they're doing it and I'm smarter and the only one that can figure it out. They will fight you every step of the way. You need to go in saying here's an idea that I think will allow us to do it better. Get them to partner with you and buy into a test and, by definition, when they buy into a test, they're going to buy into the results.

That is a very important lesson I learned. After hiring a large number of IE's, I found that were two types of IE's -- there were those that were very smart and always wanted to prove to people how smart they were and never wanted to partner with others to share the success of their results. Their projects were rarely successful, because everyone was always trying to sabotage the implementation. On the other hand, there were the others who may not be technically as smart, but were people smart – they instinctively knew how to work with and through people – make them part of the team and share the success. Successful IEs were the ones that could work with people AND sell their ideas. The most important part is to share the credit. If you take all

the credit, you're not going to be invited back to do anything else because others feel that you are always making them look bad to make yourself look better. If they become part of the solution, you can get people to support you. I had some very smart IE's who we'd end up moving to another area or eventually firing because nobody would work with them. They just couldn't work with people.

Authors: Did you ever have a situation that you wished you could have done but you didn't get a chance to do it? You couldn't sell it even though you knew in your heart it was the right thing to do?

Laval: The reversal of Epcot's World Showcase with Future World. That would have made a big difference.

Authors: How did you use Guestology to innovate? How do you test ideas that haven't existed before?

Laval: Guestology leads to innovation by doing the research to constantly seek out new knowledge. It's the knowledge obtained and insights gained from the research and data analysis that leads to the innovation. No matter what the operation is, there are always areas that need to be improved. No matter how successful you are, you always need to improve. What Guestology does is provide the science and discipline that allows you to identify those solutions, test those solutions and implement them.

Authors: How do you build a team of guestologists? How do you build a team that has a mindset like yours?

Laval: You know it's hard. I don't know how successful I was at it to be honest with you. The tradition is still there in the IE group - no question about it. They're still responsible for the science behind Guestology and they still use it. I think it takes a unique combination of analytical skills and the human relations personal skills and just a real intense interest in the subject and the data. I was out in the park all the time, walking the park and just collecting my own sense of the experience. Being in the field experiencing what it was like in the parks, versus just looking at data, was valuable in understanding how it felt as a guest.

We had many engineers who would just stay in their offices and try to manipulate the numbers. They never really got out there to understand it first hand. One of the things I really appreciated in my early years was the Disney tradition of "cross utilization." Cross utilization is where during peak periods, when there is not adequate operating staff, Disney management is assigned to work operating line positions. Some of my best ideas came out as a result of working in cross utilization. Many people wanted to avoid cross utilization because they saw it as a waste of time and a pain. I learned so much. One of the first cross-utilization experiences I had was on the monorail platform loading guests onto the trains. It was mass chaos. People just came up the ramps, we opened up the monorail doors, and it was a free for all. I was one of the people closing the doors after the train was loaded. In the chaos, I slammed the door on a person's finger. I don't know if I broke it, but I hurt the guest pretty bad. I thought there's got to be a better way to manage the loading of the monorail trains. This is when I came up with the

idea and designed the gates for the loading platform, which organized guests into groups directly in front of each individual door. That all happened as a result of my cross-utilization experience.

Authors: You had phenomenal success across your career. The things you implemented were earth shattering for the company. Was part of it being in the right place at the right time? Do you think you could be as successful today with the four parks and 18 hotels in the present Walt Disney World?

Laval: I don't know. When Disney World opened up in '71 it was a very unsophisticated company. The old joke was that the way to get into management was to work on the jungle cruise. It was just a very informal small company. Everybody knew everybody by their first name. You didn't need 10 meetings to make a decision and get something done – you just called the person responsible and got it done. The informal structure got everything done. Most of the opening management team for Disney World came from Disneyland. Therefore, we did everything the same way it had always been done at Disneyland. I was part of the new second generation – the non-Disneyland people who started when the park open in 1971. Therefore, I got in on the ground floor of Walt Disney World. I was the one of the first to bring in some of these new scientific and analytical approaches. You could say that I was lucky in that I had no competition for what I was doing. I also had a boss who let me try new things and a senior manager who would listen to my ideas. I remember one time when I presented a very controversial opinion during a meeting and after the meeting he told me: "You were wrong on that issue, but I like people who stand up for what they believe. I want you to always tell me what you think. I don't want you to tell me what I think or already know. And I might not agree with you, but I respect your opinion and want to hear it." Also, interestingly from that point on whenever there was a controversial issue he wanted looked at, he asked me to do a study or analysis on it .

Authors: Can you give us an example?

Laval: Shortly after the monorail study there was a proposal that was being considered to expand the 20,000 Leagues Under the Sea attraction. They were going to build a second dock and add additional subs. 20,000 Leagues was one of these attractions that had very long wait times. A new dock and subs would cost millions of dollars. There were 60 minute wait times, so it seemed the only way to fix it was to build a second parallel dock that would allow simultaneous loading of two sets of subs. They had already designed the new loading dock. I did an analysis that showed they did not need to make the investment in the new dock. The new Space Mountain attraction was under construction and planned to open the following summer. My analysis showed that a significant portion of the guest demand on 20,000 Leagues would be shifted to Space Mountain – thereby reducing the wait times at 20,000 Leagues. One of the many learnings from Guestology is that overall "Attraction Demand" is constant. People can only be in one place at any given time -- people in line at Space Mountain cannot also be in line at 20,000 Leagues. The analysis actually projected that, as a result in the shift in demand, the wait times at 20,000 Leagues would be reduced from 60 minutes to 25 to 30 minutes. My recommendation was that at this level of wait times, you could no longer justify the high cost of building the new dock-

When I made this presentation to management, the top executive at Disney at the time said: "You're completely wrong." He then told me of an identical situation in Disneyland with Pirates of the Caribbean. Pirates had one of the longest waits in the park. Right across from it they were building the new Haunted Mansion attraction. They had hoped that the new attraction and added capacity would reduce the lines at Pirates. However, he pointed out that after Haunted Mansion opened, not only did the new attraction have an hour wait, but the lines at Pirates got even longer. The executive confidently said the same thing would happen at 20,000 Leagues.

I didn't know he was going to use this example, but fortunately I had actually researched it. What I had discovered was that when they opened Haunted Mansion (in order to help justify a ticket price increase) they added one "E coupon" to the ticket books. On a peak day with 60,000 people in the park, this means that there were now 60,000 additional E coupons in the park for that day. The problem was that the new Haunted Mansion attraction could only carry 30,000 people a day. So where do you think those people holding the remaining 30,000 "E coupons" went? They went and stood in line for Pirates! The problem was very clear and simple – they had added twice as much demand (E tickets) than they had added in capacity. When I pointed this all out, everyone in the room was stunned. You could see that they thought it made sense, but they didn't know how the top executive would react. He had this puzzled look on his face, I'll never forget it. He said, well, that all sounds good, but that's just not the way it will work.

I then went on to argue that it will be different at Disney World. I pointed out that unlike Disneyland, where they added 60,000 E coupons to the park each day, no additional E coupons were going to be added to the ticket books at Disney World. So for every E ticket that the new Space Mountain attracts -- that means there is one less E ticket that can be used at 20,000 Leagues. It's the simple law of supply and demand. When I finished, the same executive said in a somewhat stern voice, "Well, young man you sound awful confident don't you?" And that's when I replied, "Yes sir I am, and I will bet my job on it." In an even sterner voice he then replied "we don't bet jobs here – we only bet money". The room went silent and I could now feel the tension in the room. I then replied – "Well then I will bet my salary against your salary." That totally broke up the room – everyone laughed and the tension was broken. Looking back on this many years later I realized how lucky I was and how close I was to getting fired. But it did make an impression, and everyone remembered the incident – especially since they did not add the dock and the following summer after Space Mountain opened the wait time went down to exactly what I had predicted the year before.

Authors: This has been a terrific interview and I thank you for taking the time to tell us of your career. Do you have any final thoughts to share with our readers?

Laval: I think we covered a lot of ground. I enjoyed the opportunity.

About the Authors

Robert Ford (PhD – Arizona State University) is a long-standing contributor to the Academy of Management serving in many leadership roles including editor of the *Academy of Management Executive*, Director of Placement, Division Chair for both the Management History

and the Management Education and Management Development Divisions, and board member of the Human Resources Management Division. Bob has also been a long-standing contributor to the Southern Management Association (SMA). Besides serving as its president, he was recently awarded the SMA Distinguished Service Award, elected to the SMA Fellows and served as its Dean. Bob is an active scholar currently focused on managerial practices associated with achieving customer service excellence. His work appears in both leading academic and practitioner journals such as *Journal of Applied Psychology*, *Academy of Management Journal*, *Journal of Management*, *California Management Review*, *Organizational Dynamics*, *Cornell Quarterly*, and *Academy of Management Executive*. Bob serves on the editorial boards of the *British Journal of Management*, *Cornell Quarterly*, and as the associate editor for the *International Journal of Service Industry Management*. His most recent books include *Managing Destination Marketing Organizations*, *Achieving Service Excellence: Strategies for Healthcare*, and *Managing the Guest Experience in Hospitality*. Bob has also been a leader in other professional organizations serving as a member of Destination Management Association's Accreditation Commission and chair of the Accreditation Commission for Programs in Hospitality Administration. Before joining the University of Central Florida's College of Business Administration, Bob was at the University of North Florida and the University of Alabama at Birmingham.

Duncan Dickson, an assistant professor with the Rosen College of Hospitality Management at the University of Central Florida, teaches primarily in the areas of Theme Park Management, Guest Service Management, Human Resources Management and Hospitality Communications. He has been a full time member of the Rosen faculty since 2001. Before joining the faculty, Duncan spent over 30 years in the hospitality industry, almost 20 of them with the Walt Disney World, Co. Duncan holds a BA in history from the University of Maryland, an MPS in hotel administration from Cornell University and a doctorate in educational leadership from the University of Central Florida.