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It's the Way You Tell It! What Conversations of Elementary School Groups Tell Us About the Effectiveness of Animatronic Animal Exhibits

Sue Dale Tunnicliffe

Abstract

Animals which move attract the attention of visitors, including elementary students. Does a moving animal exhibit automatically attract visitors or are there other factors which have an influence in drawing the students' (and other visitors') attention in terms of staying time and conversational content? This study compares the content of conversations generated by elementary school groups at animatronic animals displayed in the zoo as a temporary exhibit and in a natural history museum as part of the permanent exhibits in a redesigned Dinosaur Gallery. Analysis of conversations provides insights into those aspects of the exhibits which interest the students and engender comment. Previous research has indicated that animatronics in a natural history museum were the more effective type of exhibit in terms of having their story commented upon by both family and elementary school groups than were live animals in a zoo or preserved museum animals. The study reported here indicated that the moving animal models—the animatronics—in themselves are insufficient to induce many visitors to talk about them in other than a superficial, cursory manner. The results of this comparative study imply that careful exhibit design, incorporating a clear story in the exhibit, is crucial if students in a zoo are to be interested in and talk about animatronic models. A moving model in itself is not enough.

Introduction

The Need for the Study

Animatronic or robotic animal models provide novelty exhibits for visitors (Tunnicliffe, 1995a) and are rapidly becoming established as a popular form of presentation in museums and other locations. Dinosaurs are the category of animals most often shown in this exhibit form, although a few alternative types have been used, such as water birds in the Los Angeles Museum of Natural History. There is scant research about the effectiveness of animatronic models in terms of both interest shown in them by visitors and in the features and concepts about which the visitors comment.

If museums, zoos, and schools are to develop the knowledge and understanding of elementary school students from viewing exhibits, we need to be aware of two aspects of the exhibits highlighted by Hein (1995):

> But there is another whole world of learning that goes on in museums, the learning that is constructed by the visitor out of the experience and is not necessarily correlated loosely with our teaching efforts. (p. 189)

Hein first identifies the learning constructed by the visitors out of their experience, and then he discusses the fact that this is not necessarily correlated with the teaching efforts of the museum.

Knowing what the museums or school want to tell visitors is not enough. We need to know what the students point out to and tell each other, how they interpret the exhibits, and what catches their attention. Museum staff, zoo personnel, and educators also need to know the dynamics of gaining the attention of student visitors; it cannot be assumed that the nature of the exhibit—that is, showing an animatronics model—will interest visitors in one site because similar models did so elsewhere. If we are to find out in which topics visitors are interested when they look at animals as exhibits, a technique has to be found for doing so.

Various techniques that have been employed to learn about visitor behaviour, the process of visitors' learning, or the product or outcome of the exhibit encounter include whole visit "Listening in" (Cooper, 1995), part-visit listening (McManus, 1987), timing at exhibit (Falk, 1982, 1983), intervention studies (Taylor, 1993), memory prompts and recollection studies (Stevenson, 1991), and observations (Tulley & Lucas, 1991). Analysing the content of conversations of visitors is one useful method of gauging visitors interest. People in groups talk to each other and talk about those things which catch their interest and, hence, interest them. Falk and Dierking (1992) point out,

> Under normal conditions, people pay attention to things that interest them. Their interests are determined by experiences, knowledge, and feelings. This is a classic feedback loop: People learn best those things that they already know about and interest them, and people are interested in those things they learn best. (p. 100)

The study reported here uses conversational content as the indicator of interest of visitors to explore two issues. First, whether two different animatronic exhibits, a temporary one located in a zoo and a permanent one in a museum, generate similar interest amongst visitors. Second, whether the animatronic model animals elicit more interest, gauged by conversational content, than do the live animals in the zoo.

The Animatronics

There are two separate animated dinosaur exhibits in the Natural History Museum in London. One animated dinosaur is a small model placed in a type of transparent tank located at the exit of the main gallery which has no labels. There is no interpretation accompanying this exhibit, and the model is programmed to make a sequence of movements in a regular cycle, stretching its back leg, moving its tail, opening its eyes, and breathing. Its aim is to stimulate intervisitor discussion about how similar the dinosaurs were to modern reptiles. The other animatronics are exhibited in a diorama which is a reconstruction of the scenery as it is believed to

have been at the time the animals portrayed were alive. It contains four model dinosaurs.

In 1994, the London Zoo staged an exhibition about extinction which featured nine animated prehistoric animals which were set out around the zoological gardens and several living specimens such as the cichlids in the aquarium and the Arabian Oryx. The visitors could obtain a passport in the form of a paper booklet into which they could stamp an inked impression at each exhibit. All the exhibits had lengthy text labels which contained the scientific name of the animal. The results from a study conducted in the Natural History Museum suggest that the stereotypic-like behaviour provided by animated models is the most effective way to draw the attention of visitors towards specific features (Tunnicliffe, 1995a). Would visitors receive a message from animatronics in another location as strongly as they did from those in the Natural History Museum?

Research Design

The Conversations

A total of 73 conversational exchanges generated at the zoo animatronics from a range of age groups within the elementary sector—four years to eleven years of age in England—and their accompanying adults, were collected using a handheld tape recorder. Two days were devoted to collecting the zoo animatronic data. No further time was available for this project at that time and the exhibition was only temporary, providing another constraint on opportunities for data collection. Various other descriptive demographic data, such as the types of animals observed and the types of adults accompanying the group, were also recorded. Permission to both listen to and record the groups, together with demographic data, was sought where possible from the teacher in charge of the school party.

The conversations were transcribed and each set of transcribed conversations was read through to obtain the sense of the dialogue. A unit of conversation was defined from when words were begun to be spoken in front of the exhibit to when they ceased or the group walked away. An example of an exchange is shown below:

> Boy: This is a yellow one. They are really big. They are bigger than our cat.
> Boy: No! It is a cat.
> (eight-year-old boys at the Sabre Tooth Tiger animatronic in the zoo)

Analysis of Conversational Units

The units were each analysed using a systemic network (Bliss, Monk, & Ogborn, 1983). The technique of systemic network analysis was previously used in a study by Tunnicliffe (1995a) of the conversations of children's at zoos, museums and a farm where further detail may be found.

Essentially, the elements of a conversational exchange are allocated to a category which has been given a number within the coding network (Figure 1). The incidence of each category was entered into a database and the totals were found. At one extreme of the continuum along which the conversations were categorised are highly specific items, whilst at the other end is the main descriptor, in this case "group's comments." The final network required a total of 74 terminals to describe the children's conversational content. The numbers at the right of Figure 1 label the most specific level of table categorisation. A bar, "[", indicates that an attribute may

be either/or but not a member of both categories, whilst a bracket, "{", indicates one of a number of categories which an animal may have. Thus, the following conversational exchange between two eight-year-old boys at the Sabre Toothed Tiger animatronic in the zoo is transcribed as follows,

Boy: This is a yellow one. They are really big. They are bigger than our cat.
Boy: No! It is a cat.

would be written with the appropriate number of the terminal for each topic mentioned (i.e., the number taken from the network). The conversation with the appropriate numbers from the network appears below:

20/ 52/ 50/ 65/ 55
Boy: This is a yellow one. They are really big. They are bigger than our cat.

1/ 55
Boy: No! It is a cat.

The four main categories of the network are as follows:

1. Management and social comments—for example, "Look!" , "Miss!," "Lisa look here!."
2. Ostensive comments in regards to exhibit access—for example, comments which assist the visitor in finding the animal—for example, "Oh look at that!," "Where is it?," or "It is up there."
3. Other exhibit comments were on labels, furniture, the setting, and other features—for example, ". . . on the branch," "It's by the hedge," ". . . its feeding bowl."
4. Animal focused comments with six subcategories of comment:

   (1) Body parts—for example, "legs," "It's big," "Where's its head gone?," ". . . bigger than our cat."
   (2) Behaviours—for example, "It's moving over here," "It's dying."
   (3) Names and naming—for example, "It's a Tyrannosaurus," " That's a woolly mammoth."
   (4) Environmental aspects—for example, "It's endangered."
   (5) Comments of an affective or emotive nature—for example, "I like that," "It's good ain't it?," or " I'm not scared. . . . "
   (6) Interpretative comments—for example, anthropomorphic comments: "It looks like granddad!"; knowledge source comments: providing or seeking such as, "There is an electric sign, Miss!," "What is it?," or "It was in that dinosaur film!"; or authenticity comments such as "Is it real?," "Let's go and see something real now."

The final coding was entered into the MINITAB worksheet: A "1" was entered in the appropriate column if the topic were mentioned and a "0" if it were not. Tallies of each topic were made and crosstabulations were made where appropriate. Chi squared analysis was performed on data for the same topic but from two of the sets of results—for example, zoo animals and museum animatronics, live zoo animals and zoo. Each two results were considered for the analysis as a two by two table. The results for each site were put together as a compilation table of the results for presentation of the data.

Results

Content of Conversations of Elementary School Groups at Zoo Animatronics

Interpretation and labelling (allocating a name to something) are the two main aspects of language use identified in science teaching and learning (Sutton, 1992), but it is also the way that visitors in museums and zoos make sense of that which they view. The data from the analysis of the conversational content which was generated in front of the animatronics in the zoo are presented in Tables 1 and 2 and show that visitors pass interpretative comments and do name and categorise the animals, their behaviours, and parts of their anatomy. Furthermore, they voice their feelings and aspirations regarding the models.

Most all the conversational segments analysed referred both to the exhibit and to an animal within it (Table 1). Almost three quarters of the conversations contained at least one mention of a social comment (e.g., "Yes," the person's name, or a longer comment) or management comment (e.g., "Come here!" or "Look!"). There was a low "exhibit access" value of 30%. Comments in this category are ones such as "Where is it?" Such a result indicates that the animal models in the zoo were relatively easily located because only under a third of the exchanges mentioned this category. Other aspects of the exhibit were mentioned in 40% of the exchanges (e.g., "We've found where the noise is coming from, on a tape, " and "Look at that stuff on the floor!" (wood chips). Approximately the same number of conversations

Table 1
The Number of Conversations of School Groups Containing Comments at Animatronic Specimens Exhibited in the London Zoo

Category	Animatronics in zoo n = 73	
	No.	%
Exhibit focus	71	97
Animal focus	67	92
Management/social	53	73
Exhibit access	22	30
Other exhibit comments	29	40
All body parts (anatomy)	25	34
All behaviour	21	29
All naming comments	36	49
Affective attitudes	30	41
Emotive attitudes	26	37
Human/animal domination	9	12
Interpretative	54	74
Real/alive	18	25
Knowledge source	44	60
Human/animal interpretation	3	4
Environment	4	6
Conservation	2	3
Habitat	3	4

Table 2
Number of Conversations in Which at Least One "Other Exhibit" Reference Was Made at Animatronics Models in the Zoo

Category 29 (40%)	Animatronics in Zoo n = 73	
	No.	%
Direct contact (e.g., touch, smell)	18	25
Exhibit furniture	8	11
Stamps for cards	6	8
Label referents	2	3
Biofact referents	1	1
Setting	8	11

contained at least one comment about anatomical features and behaviour, and half named the animals in some way.

Three quarters of all conversations generated a type of interpretative comment. A quarter of the conversations referred at least once to the authenticity of the animatronics, using phrases such as "For one moment I thought it was real!," "So that's not real live now?," or a teacher remarking in reply to an anxious pupil, "Is it real or no; I hope not." Questions or statements with information were made at least once in 60% of exchanges, but few comments which interpreted the specimens in human terms were generated. Very few environmentally oriented exchanges were heard, but those that were showed an appreciation by the pupils of extinction, as the following exchange illustrates:

Boy: Sabre Toothed Tiger, Toothed tiger, why's it called tiger?
Girl: I love him. It's a Sabre Toothed Tiger.
Teacher: Pardon? Yes, I know.
Girl: It's standing on an Elephant (a woolly mammoth).
Teacher: Yes, I know.
Girl: They used to be here.
Teacher: Yes, they used to be, then they died out. John, are you coming?

The above exchange also shows how the teacher is presented with a teaching cue by the child but she scarcely acknowledges this, being preoccupied with the management of another group member, John.

The data presented in Table 1 shows that only a third of the conversational segments mentioned a body part or a behaviour, even though the models were moving repeatedly in a planned sequence. The low number of conversations that contained a behaviour reference, in which the majority of comments were focused on attracting behaviour (i.e., that which the model was exhibiting such as, "That one's killing a Triceratops"), was surprising because each model was involved in some action.

"Other Exhibit" comments (Table 2) were generated at least once in 40% of conversations of which one quarter, the largest group, referred to a direct experience with the animals such as touch or smell, or the wish for one. For example, a seven-year-old girl remarked that, "I wish I could stand on his head," referring to the Smilodon.

References to labels were remarkably low. In view of the novelty of the exhibits, it was the first time robotics had been displayed in the zoo, and the enthusiasm with which visitors were expected to view these animals, due to the overwhelming popularity of the animatronics exhibits in the Natural History Museum, such lack of overt label usage was surprising. Furthermore, reading through the transcripts showed that "text-echoing" (McManus, 1989) did not occur at the zoo models. Moreover, as the models were shown in an extinction theme, it is surprising that so few conversations mentioned the topic.

Comparison of Content of Conversations Generated by Elementary School Groups at Animatronics in the zoo and in the Museum

The data in Tables 3-4 compare the results obtained for the robotics animals in the zoo and those at the ones in the museum which had been collected previously (Tunnicliffe, 1995a). The data presented in Table 3 shows that "exhibit access" was mentioned significantly more in the museum. At first impression, this finding is surprising because both sets of models were clearly visible. Detailed examination of transcripts, however, showed that visitors were drawing the attention of each other to the exhibits or seeking aspects of them.

Groups interpreted the exhibits significantly more within the museum and made authenticity and generated knowledge source comments, such as questions and statements of knowledge and recall. Environmental comments were minimal in both cases, however, suggesting—as in the zoo at the live animals where the mission of zoos is to promote this—that conservation is not a topic about which visitors comment.

Previous research (Tunnicliffe, 1995a) showed that the visitors uttered double the number of comments in conversations naming the groups to which the animal belonged at animal specimens other than the dinosaur models in the Natural History Museum and the London Zoo. At the zoo animatronics, the number of conversations using some sort of name—for parts and behaviours as well as category of animal—are under half of the total, far below that found at other animal exhibits. However, 49% of conversations at the zoo animatronics referred to a name of the type of animal in some way. This value is slightly, but not significantly, more than the value found in the museum where there were only two species named on display. There were nine species in the zoo. As visitors usually name the animal in nearly all conversations, the zoo figure is surprising and indicates lack of interest with the exhibits.

The data in Table 4 shows that significantly more comments about behaviour were made at the museum animatronics. It is important to note that the main museum dinosaur diorama featured the animatronics both feeding, moving, and interacting in an attention-attracting manner. In contrast, the zoo animatronics were showing one behaviour which was often aimless and without a clear context. Overall, both types of animatronics in both locations had a similar number of naming comments made about them. The zoo animatronics elicited a significantly higher number of conversations with at least one reference to a comment naming the category—order, class or genus ($P < 0.005$)—to which the animal was thought to belong. This is not, however, an unexpected finding because of the greater variety of categories which the zoo animatronics represented.

The setting in which the models were exhibited was the only significantly different category mentioned within the "Other Exhibit" group (Table 4). The design of the settings in the museum was a far more integral component of the exhibit than was

Table 3
The Content of Conversations Generated at the Animatronics in London Zoo Compared with Those Obtained in the Natural History Museum London (Major Categories)

Category	Animatronics in zoo = 73*		Animatronics in museum n = 422*		χ^2	Probability
	No.	%	No.	%		
Exhibit focus	71	97	422	100	N/A**	
Animal focus	67	92	422	100	N/A	
Management/ social	53	73	304	72	0.01	
Exhibit access	22	30	239	57	17.53	$p < 0.005$
Other exhibit comments	29	40	173	41	0.04	
All body parts (anatomy)	25	34	309	73	43.08	$p < 0.005$
All behaviour	21	29	363	86	28.65	$p < 0.005$
All naming comments	36	49	176	42	1.47	
Affective attitudes	30	41	229	54	4.33	
Emotive attitudes	26	37	199	49	3.34	
Human/animal interaction	9	12	64	15	0.41	
Interpretative	54	74	400	95	35.50	$p < 0.005$
Real/alive	18	25	170	40	6.45	
Knowledge source	44	60	329	78	10.48	$p < 0.005$
Human/animal interpretation	3	4	97	23	13.76	$p < 0.005$
Environment	4	6	19	5	N/A	
Conservation	2	3	2	3	N/A	
Habitat	3	4	19	5	N/A	

* These results are statistically viable.

** "For tables larger than 2 x 2, the mean of the expected values should be six or more for tests at the 5% level; for tests at more demanding levels, like 1% or 0.1%, the minimum expected value should be somewhat higher" (Erickson & Nosanchuk, 1977, p. 255). Therefore, the Chi squared value is not given for results that fall into this category of below minimum number expected values.

the case in the zoo animatronics which were largely an animal without the support of a setting that helped tell the story. The museum animatronics, although fewer in number and species variety, were more effective in eliciting more comments from elementary school groups than were the zoo animatronics.

Table 4
The content of conversations generated at the animatronics in London zoo compared with those obtained in the Natural History Museum London (Other exhibit comments)

Category 29 (40%)	Animatronics in zoo n = 73		Animatronics in museum n = 422		χ^2	Probability
	No.	%	No.	%		
Direct contact						
e.g. touch	18	25	66	16	3.59	
exhibit furniture	8	11	79	19	2.58	
stamps for cards	6	8	n/a			
label ref.	2	3	24	6	**	
biofact ref.	1	1	n/a			
setting	8	11	108	26	7.43	$p < 0.025$

** the numbers in each cell of the table used to work out the chi square value were not high enough to enable the calculation to be made.

Comparison of Conversations Generated in the Zoo by Elementary Groups at Live Zoo Animals and at the Animatronic Models

Traditionally the exhibits in a zoo feature live animals. If the data collected from comments about the animatronic animals are compared with data collected in the same zoo but at live animal exhibits (Table 5), it can be seen that the animatronics elicit far fewer comments in the same categories as do the live animals.

Live animals engender significantly more comments about the structural features of the animals, their behaviours, questions about their authenticity, and anthropomorphic interpretations. Visitors have a different pattern of emphasis in the topics about which they comment between live and animatronic animals in the zoo. If the comments about "other aspects" of the exhibit are considered, there are some significant differences which reflect the different nature of the two types of exhibits (Table 6).

Significantly more comments about touching and hearing are made at the animatronic exhibits. Conversely, significantly more comments about other aspects of the exhibits (e.g., the exhibit furniture) were made about the live animals. More references to labels were made at the live animals, but the numbers overall were too small for a statistical analysis to be performed. No biofacts were mentioned at the live animals, an unsurprising find since there where there were few on display. The number of conversations about the settings were too small for statistical analysis. The animatronics encourage the use of other senses to perceive and explore the exhibits, whereas live animals produced comments about other aspects of the exhibit, which were lacking on the whole in the animatronic exhibits where the model stands alone.

Table 5
The Number of Conversations of School Groups Containing Comments at Animatronics in the Zoo and at Zoo Animals (Major Categories)

Category	Animatronics in Zoo n = 73		Animatronics in Museum n = 459		χ^2	Probability
	No.	%	No.	%		
Exhibit focus	71	97	459	100	N/A**	
Animal focus	67	92	459	100	N/A	
Management/social	53	73	354	77	0.112	
Exhibit access	22	30	289	63	27.95	$p < 0.005$
Other exhibit comments	29	40	227	50	2.39	
All body parts	25	34	280	61	18.43	$p < 0.005$
All behaviour	21	29	301	66	35.72	$p < 0.0053$
All naming comments	36	49	401	87	62.16	$p < 0.005$
Affective attitudes	30	41	193	42	0.02	
Emotive attitudes	26	37	143	32	0.58	
Human/animal interaction	9	12	72	16	0.55	
Interpretative	54	74	443	97	53.07	$p < 0.005$
Real/alive	18	25	41	9	15.80	$p < 0.005$
Knowledge source	44	60	254	55	0.62	
Human/animal interpretation	3	4	100	22	12.61	$p < 0.005$
Environment	4	6	19	4	N/A	
Conservation	2	3	5	1	N/A	
Habitat	3	4	14	3	N/A	

** the numbers in each cell of the table used to work out the chi square value were not high enough to enable the calculation to be made.

Discussion

The data presented in Tables 1-6 show that, contrary to expectation, exhibits of animatronic models do not necessarily elicit similar interests when they are of different animals and in different settings. The constructed setting within which the animatronics model is positioned within the zoo and museum is also an important part of the totality of the exhibit. The animatronic alone is not necessarily sufficient to interest the visitors. Previous work (Tunnicliffe, 1995a) had suggested that animatronics were the exhibit of choice to convey a definite message to visitors, including school groups. It is important to bear in mind that the museum animatronics were shown in a traditional museum building with "museum" overtones; the ambience of this building seemed to affect the intensity of conversational content in both school and family groups (Tunnicliffe, 1996). Thus, the situation factor may be partially responsible for the very different conversational content found with a similar type of exhibit but in a different location; however,

Table 6
Number of Conversations in Which at Least One "Other Exhibit" Reference Was Made at Animatronics Models and Live Animals in the Zoo

Category	Animatronics in Zoo n = 73		Animatronics in Museum n = 459		χ^2	Probability
	No.	%	No.	%		
Direct contact (e.g., touch, smell)	56	12	18	25	8.161	$p < 0.005$
Exhibit furniture	112	24	8	11	6.51	$p < 0.005$
Stamps for cards	N/A	6	8	N/A		
Label referents	53	12	2	3	* Number too small	
biofact referents	0	0	1	1	*	
setting	82	18	8	11	*	

* The numbers in each cell of the table used to work out the chi square value were not high enough to enable the calculation to be made.

there is a difference in the number of conversational exchanges for the same categories of conversation in the zoo when the visitors look at the live animals and the animatronics (Tables 5 and 6; Tunnicliffe, 1995a). This difference can surely be due to the nature of the animal exhibit, whether it be live or animatronic, and their settings.

The evidence presented in this paper indicates that relying on animatronics alone to engage the attention of school visitors, measured by conversational content, in terms of interpretation, animal observations, and naming or labelling, is insufficient. Biology is an observational science (Hill, 1986) and it is important to biology educators, be they in museums, zoos, exhibit designers, or school teachers, that we know which type of exhibit—animated or alive—and which taxonomic variety elicit the most comments so that effective educational strategies as well as future exhibits and the interpretation desired by the institution can be produced.

The conclusion drawn from this study is that it is not the nature of the exhibit per se that elicits the observations and accompanying comments but that the design of the exhibit in its entirety is the factor of paramount importance. Noticing an animal exhibit through a sense other than sight usually elicits a comment (Tunnicliffe, 1995b). However, when animatronics are placed in a zoo they are in "attraction and interest competition" with live animals which move unpredictably and unsequenced in contrast to the museum situation where the "competition" was static and most frequently skeletal.

The animatronic models presented within the Natural History Museum had a definite, albeit succinct, story and this was "told" clearly and effectively through carefully designed exhibits featuring high-quality models. In contrast, the zoo animatronics were set within an existing context and lacked the storyline support provided by a purpose designed and constructed setting which visitors find

important when interpreting exhibits. The behaviours portrayed by the zoo animatronics were singular and largely unfocused actions lacking a clear storyline which the visitors could "read" and in which they were interested. It is important to note in this discussion that the number of conversations which referred to the setting in connection with both the zoo animals and the museum animatronics were significantly more than for the zoo animatronics.

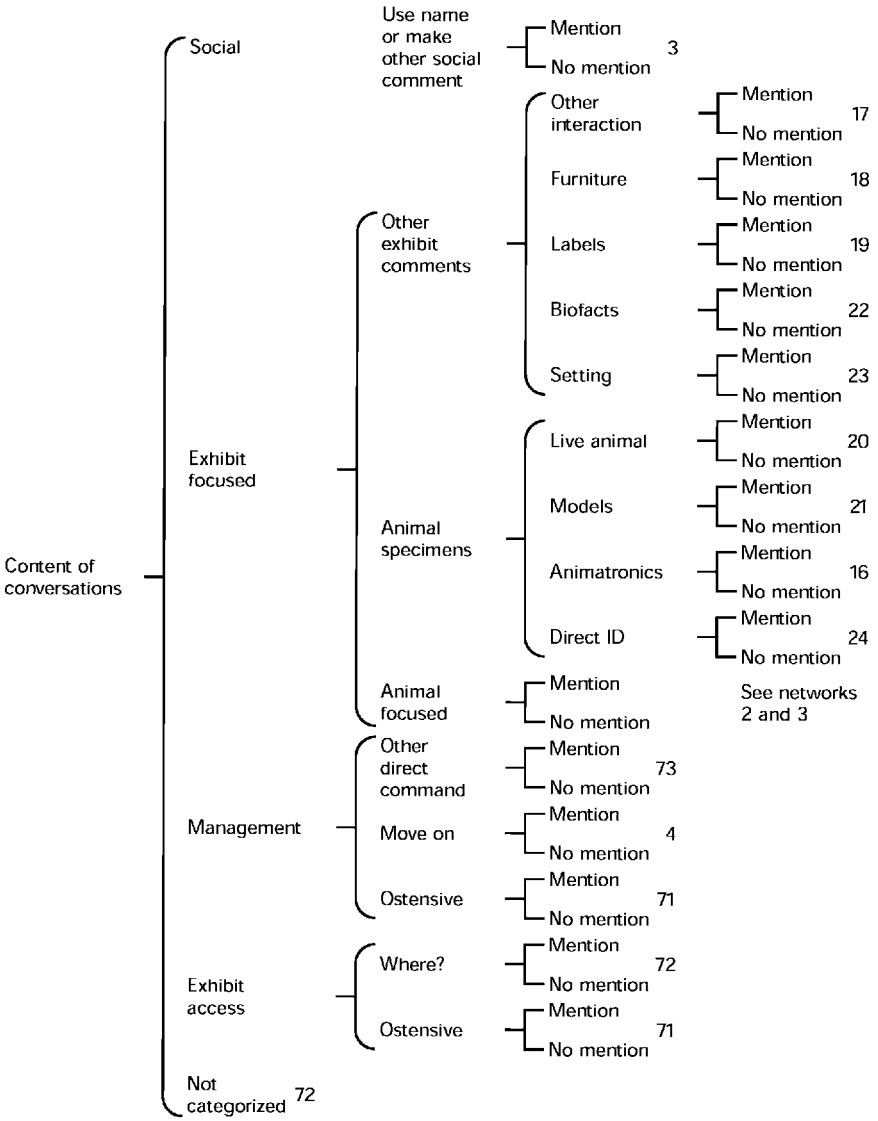
The implication for zoos and museums is that it is not sufficient to place animatronics in a location with little else in the exhibit setting and assume that the models will attract the visitors and engender observations about the exhibit, make connections with previous knowledge and experience, and evoke interpretation of what they have seen. Zoos and museums planning to install animatronic models should ensure that the models are presented within a context which is designed to help tell the story of the animals and their behaviour which is modelled by them. The exhibit of a Protoceratops guarding its eggs was situated away from the living animals but was the exhibit in the zoo animatronics with the strongest storyline:

> Child: "That dinosaur's coming out of an egg! Look can you see. See what happens to the egg?"

The exhibit, animal, setting, exhibit furniture, and interpretation, that aims to tell a clear story which students will understand, should have a short succinct, distinctive story, designed around a clear concept such as meat eater and plant eater, similarities between dinosaurs and modern reptiles, or egg laying of dinosaurs. The labels associated with the animatronics should be short, providing a name for the specimen and a concise summary of the overall story that the exhibit is telling. Even if the students do not read them, the labels serve as cues for the accompanying adults to help them retell the story accurately to their charges.

Listening to the conversational content school groups within an institution provides a useful tool in helping teachers understand the interests and preferences of their students. Instead of using the whole network presented here, a checksheet of the main categories, or of those in which you are interested, can be drawn up and used on one sheet of paper. Although such a method loses the nuance of relationships between categories that can be found using a systemic network, it suffices admirably for the purposes of finding the major categories of visitors' conversational content. Teachers need to be secure in their understanding of what they want their students to focus upon during the visit and to carefully choose the appropriate location where there are not exhibits of totally different natures in conflict with each other. It appears that animatronics themselves in zoos are not of great interest to students; whereas when they are in the museum, they attract attention. Furthermore, the quality of the exhibits in terms of setting and the story inherent within the exhibit is critical in gaining the attention of the students. The conclusion of this comparative study is that the crucial factor in attracting the attention of the visitor to an exhibit and the message inherent within it is "the way you tell it."

Figure 1
Main Network Used in the Analysis



Correspondence regarding this article should be directed to

Dr. Sue Dale Tunnicliffe
Homerton College
18 Octavia
Bracknell
Berkshire
RG12 7YZ
United Kingdom
106013.1303@compuserve.com

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