

Relationship between the Thematic Function and Message of Dollarware Vessels and their Iconographic Motif and Coloration

Valeria Rytova
Department of Anthropology, McGill University



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Cite as: Rytova, Valeria. 2008. Relationship between the Thematic Function and Message of Dollarware Vessels and their Iconographic Motif and Coloration. Dollarware Project, report 15. <http://dollarware.org/report15.pdf>.

Abstract: The main objective of this research project is to determine whether there is a relationship between the potential purpose of Dollarware drinking vessels as intended by the makers, and their iconographic aspects. Moreover, it looks for a possible correlation between thematic purpose/message and a predominant color of artefacts within specific thematic categories. The whole sample was categorized into 12 groups according to interpreted potential function/theme/message. Frequency charts were created from all 12 categories, however only 4 Chi-square values were deduced (as only they had high-enough values to properly carry out this analysis). As a result, it was found that 3 categories exhibited a 'Function vs. Motif' relationship, and 2 showed a 'Function to Color' relation.

Introduction

Drinking vessels are objects of our everyday lives. They are present in most households, and serve various functions, from the principal use for drinking liquids, to eating soup, to storing small objects, etc. Furthermore, it is suspected that many households in Montreal contain dollarware mugs, as they are cheap, they are practical, there is a variety of shapes, sizes, colors, and decorative characteristics to choose from (speaking from the perception of a student). Now that I have somewhat established the importance of dollarware mugs in our lives, it is crucial to elaborate on the central questions of this research and why I chose to ask them. Precisely, what interests me the most about dollarware drinking vessels is their iconographic value. Why? Because art is also a major component of our life, in effect, it is everywhere – from books, to fashion, to museums, to schools, to architecture and so on. What I was eager to find out is what role does the artistic factor of dollarware mugs play with respect to their potential purpose, as intended by the makers. I believe this question to be fascinating as it's interesting to know whether two mugs with different iconographic context and/or color, cause one to use them for distinct purposes, just because they represent different motifs, ideas, messages, symbols, etc...Although I have read no previous substantial literature on this topic, I have obtained the basic ideas about classification, typology, and a few statistical techniques that have enabled me to design and carry out this research project, which evolves around the following questions: does the mug's iconographical aspect represent its potential purpose? Is there a strong correlation between the two: purpose vs. Iconography? Is there a correlation between the message, theme and potential purpose of dollarware drinking vessels, and the colors they depict?

Methods

To begin with, the complete sample of 289 Dollarware and Value Village drinking vessels was classified into 12 categories, according to their verbal message and overall theme, and potential functions were interpreted for each assemblage. Classification was done by one individual (myself), to reduce the amount of error in terms of sorting consistency. Subsequently, a total of 24 frequency histograms were created portraying the various iconographic motifs and color variation for each category. Also, a color frequency histogram for the entire sample was plotted in order to show the rate of occurrence of 1-10

colors per vessel. Afterwards, it was necessary to establish a relationship between the message/function/theme of the mugs and their decorative motifs as well as coloration. To do this, Chi-square tests were performed for Categories 1, 2, 6, and 12. Specifically, two types of Chi-squares were created for each of the four involved groups: theme/purpose vs. Iconographic aspect, and purpose/message vs. Color. The reason for the limited chi-square analysis is the fact that only these four categories provided enough numerical data, as Chi-square testing is not accurate for numbers with only 1 digit. Unfortunately, most of the categories contained few vessels, while the majority fell into the larger categories. For the same reason, a third type of Chi-square – motif vs. Color, was not carried out.

Results

The entire sample of 289 artefacts has been divided into the following 12 categories, according to their message and overall theme:

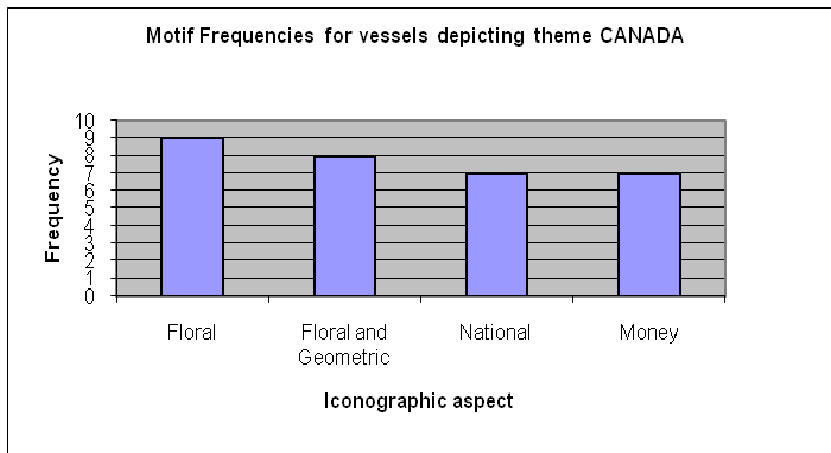
1. Theme: 'CANADA'

These mugs have a potential purpose (as per makers' intention) to be a personal purchase or gift during the National Holiday 'Canada Day' or a souvenir from Canada. Essentially, may be used as a drinking vessel for a variety of contents, depending on the user's needs/desires.

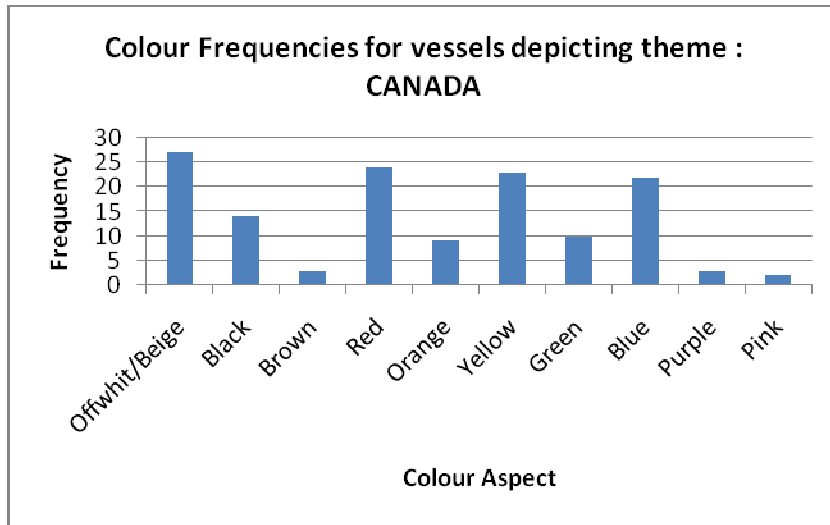
Artefacts: A-01 , A-02, A-03, A-04, A-05, A-06, A-07, A-11, B-06, D-01, D-02, D-04, D-06, D-09, D-12, D-14, E-07, E-09, E-11, E-14, E-15, E-18, J-03, J-06, J-07, J-13, K-01, K-02, K-03, K-04, M-06

Total: 31 vessels out of the complete collection of 289

Figure 1: Motif frequencies for vessels depicting theme Canada



Theme: 'CANADA'	
Iconographic Aspect	Frequency
Floral	9
Floral and Geometric	8
National	7
Money	7



Theme: 'CANADA'

Colour Aspect	Frequency
Offwhit/Beige	27
Black	14
Brown	3
Red	24
Orange	9
Yellow	23
Green	10
Blue	22
Purple	3
Pink	2

Figure 2: Colour Frequencies for vessels depicting theme Canada

Chi Square Value: (see appendix A for complete Chi-square charts for category 1)

- Purpose vs. Iconographic aspect: to determine whether there is a relationship between the purpose of a drinking vessel and its predominant iconographic motif. Thus, in this case I have examined the correlation between Canadian vessels and their floral motif. The P value was 0.301929 – much greater than 0.05, which means that there is no correlation.
- Purpose vs. Color: to determine if there is a correlation between the function/theme of a vessel and a particular color. In other words, is one color specifically predominant over the others within a thematic category (in this case 'Canada'). Here, the chi square value is 0.57370205 – much higher than 0.05 level of significance, meaning that there is no correlation between beige/off-white and mugs within the 'Canada' category.

2. COFFEE, CAFFE or CAFÉ, LATTE, ESSPRESSO

The above inscriptions on this category of mugs suggest their likeliness to be used to drink beverages made from coffee beans.

Artefacts: B-01, B-05, B-11, C-01, C-13, D-17, D-19, E-02, E-04, E-08, E-10, E-13, E-17, F-06, I-04, I-10, I-19, I-20, K-16, K-17, M-04, N-11, N-25, N-35, N-44

Total: 25 vessels

Theme: COFFEE

Iconographic Aspect	Frequency
Food	14
Geometric	7
Floral	1
Blank background	3

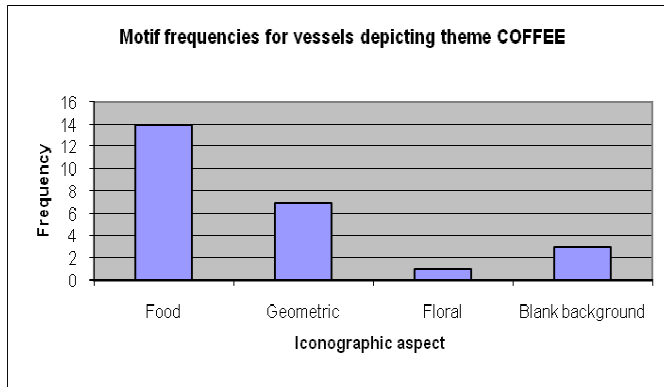


Figure 3: Motif frequencies for vessels depicting theme Coffee

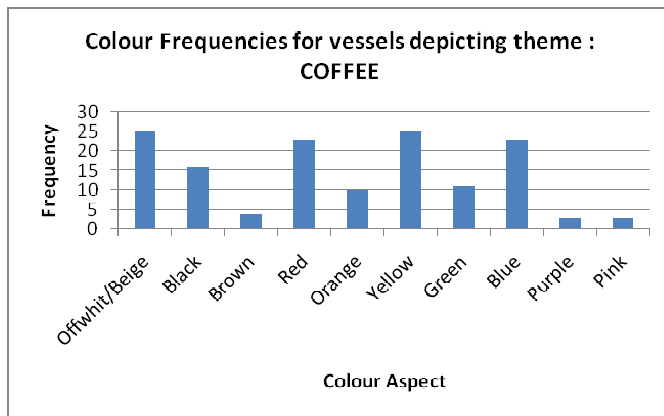


Figure 4: Colour frequencies for vessels depicting theme Coffee

Theme: COFFEE

Color Aspect	Frequency
Off-white/Beige	25
Black	16
Brown	4
Red	23
Orange	10
Yellow	25
Green	11
Blue	23
Purple	3
Pink	3

Chi Square Value: (see appendix B for complete Chi-square charts for category 2)

- **Purpose vs. Iconographic aspect:** the P value is 5.81E-13, so it is smaller than 0.05, which means that there is a strong correlation between vessels used for drinking coffee, and food as their main iconographic aspect.
- **Purpose vs. Color:** in this category, there are 2 predominant colours – beige/off-white and yellow. However, only the yellow color is in correlation with the mugs meant to drink coffee, as the P value was found to be 7.77-E-06.

3. LOVE

Drinking vessels portraying the theme of love, either verbally or symbolically are most probably used as presents for loved ones, especially for an occasion (like Valentine’s Day)

Artefacts: D-03, D-16, D-18, F-14, N-33

Total: 5

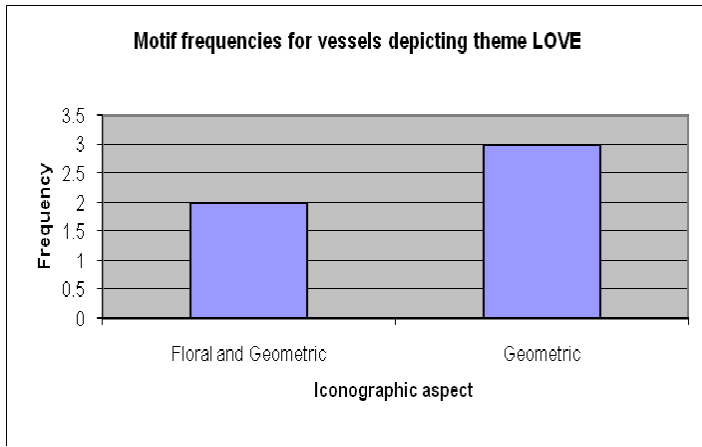


Figure 5: Motif Frequencies for vessels depicting theme Love

Theme: LOVE

Iconographic Aspect	Frequency
Floral and Geometric	2
Geometric	3

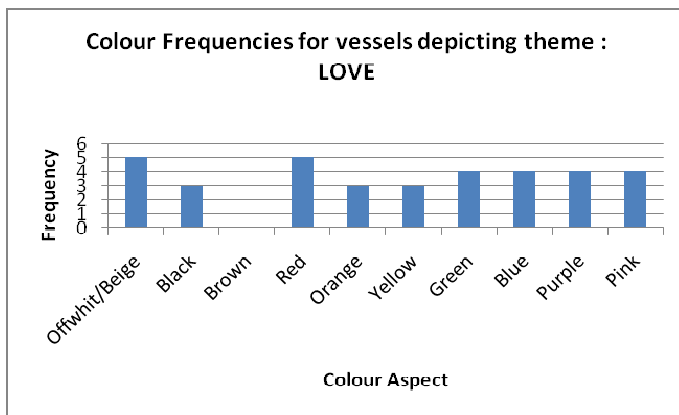


Figure 6: Colour frequencies for vessels depicting theme Love

Theme: LOVE

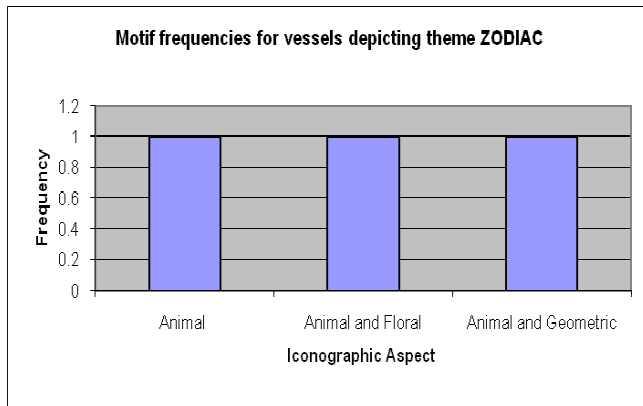
Color Aspect	Frequency
Off-white/Beige	5
Black	3
Brown	0
Red	5
Orange	3
Yellow	3
Green	4
Blue	4
Purple	4
Pink	4

4. ZODIAC

A vessel depicting a zodiac sign or something of horoscope significance may serve the function of a gift for someone born under that particular sign.

Artefacts: B-19, F-03, M-20

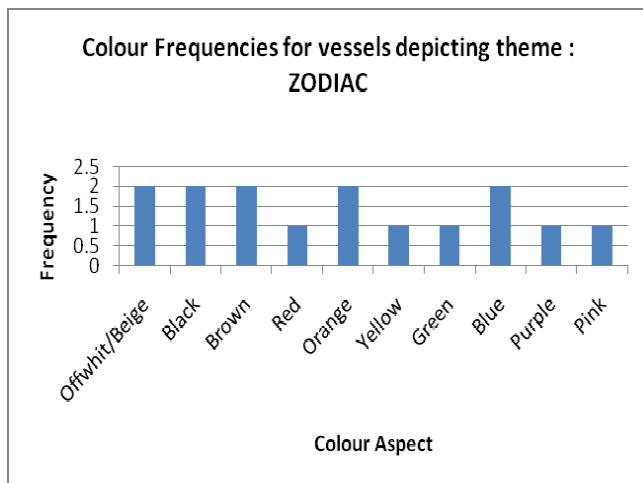
Total: 3



Theme: ZODIAC

Iconographic Aspect	Frequency
Animal	1
Animal and Floral	1
Animal and Geometric	1

Figure 7: Motif frequencies for vessels depicting theme Zodiac



Theme: ZODIAC

Color Aspect	Frequency
Off-white/Beige	2
Black	2
Brown	2
Red	1
Orange	2
Yellow	1
Green	1
Blue	2
Purple	1
Pink	1

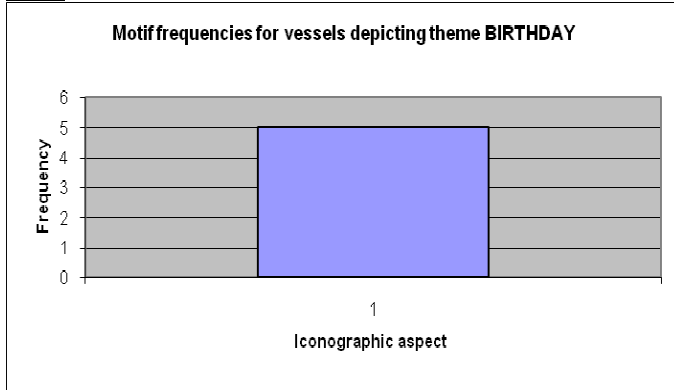
Figure 8: Colour frequencies for vessels depicting theme Zodiac

5. BIRTHDAY

Such a mug is often suitable for a birthday gift, and afterwards may be used as desired by the recipient.

Artefacts: B-02, B-03, B-10, I-07, I-13

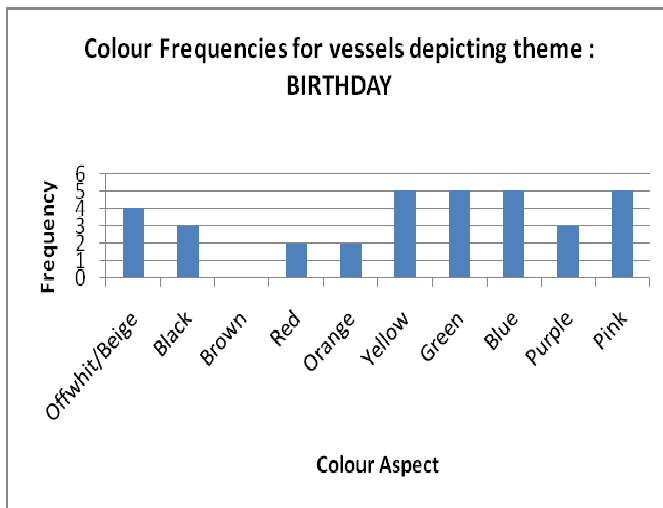
Total: 5



Theme: BIRTHDAY

Iconographic Aspect	Frequency
Holiday and Geometric	5

Figure 9: Motif frequencies for vessels depicting theme Birthday



Theme: BIRTHDAY

Color Aspect	Frequency
Off-white/Beige	4
Black	3
Brown	0
Red	2
Orange	2
Yellow	5
Green	5
Blue	5
Purple	3
Pink	5

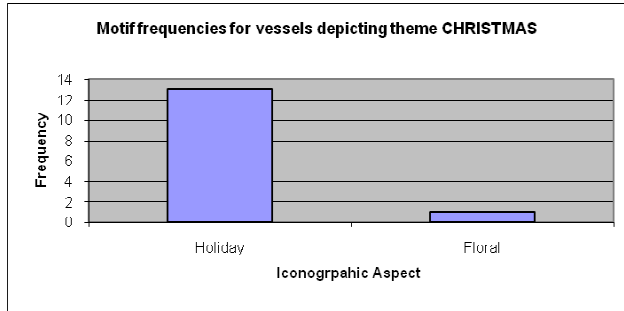
Figure 10: Colour frequencies for vessels depicting theme Birthday

6. CHRISTMAS

This category includes drinking vessels representing Santa, Christmas songs, Christmas tree, and just the general theme of Christmas. These can serve as gifts for this occasion, or as home decorations throughout this holiday.

Artefacts: A-16, E-01, E-03, E-06, E-12, G-04, J-17, L-01, L-02, N-13, N-20, N-23, N-52, N-60

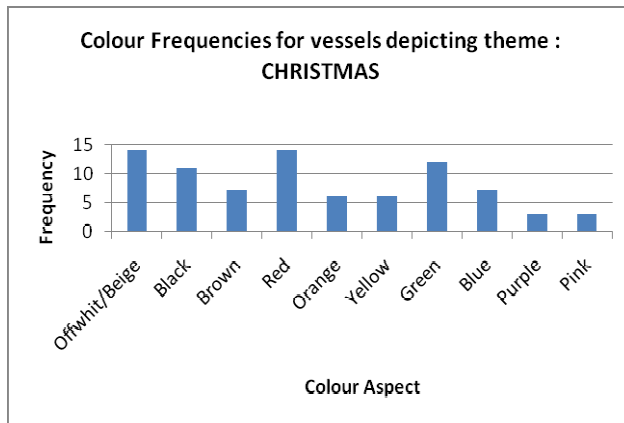
Total: 14



Theme: CHRISTMAS

Iconographic Aspect	Frequency
Holiday	13
Floral	1

Figure 11 (previous page): Motif frequencies for vessels depicting theme Christmas



Theme: CHRISTMAS

Color Aspect	Frequency
Off-white/Beige	14
Black	11
Brown	7
Red	14
Orange	6
Yellow	6
Green	12
Blue	7
Purple	3
Pink	3

Figure 12: Colour frequencies for vessels depicting theme Christmas

Chi Square Value: (refer to Appendix C for complete Chi-square charts for category 6)

- Purpose vs. Iconographic aspect: the P value is 2.06E-26 – much smaller than 0,05 meaning that there is a strong relationship between mugs under the theme of Christmas and Holiday as their main iconographic motif.
- Purpose vs. Color: there are 2 predominant colors within this category – off-white/beige and red. However only the red correlates with the Christmas theme/function of these mugs, as the P value is 2.22E-05.

7. EASTER

Assemblages in this category portraying animals such as chicks and rabbits, eggs, floral motifs and other, are likely to be used for decorative purposes or as gifts during this holiday.

Artefacts: F-02, F-05, L-03, L-04, L-05, L-07, N-36

Total: 7

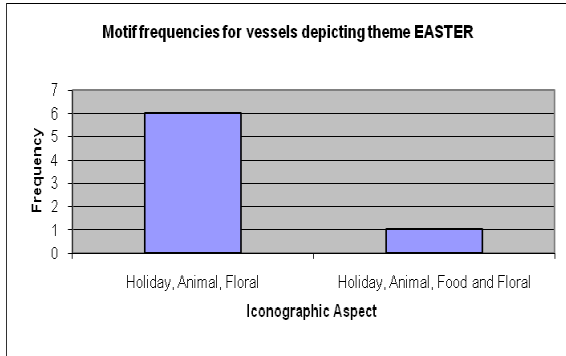


Figure 13: Motif frequencies for vessels depicting theme Easter

Theme: EASTER

Iconographic Aspect	Frequency
Holiday, Animal, Floral	6
Holiday, Animal, Food and Floral	1

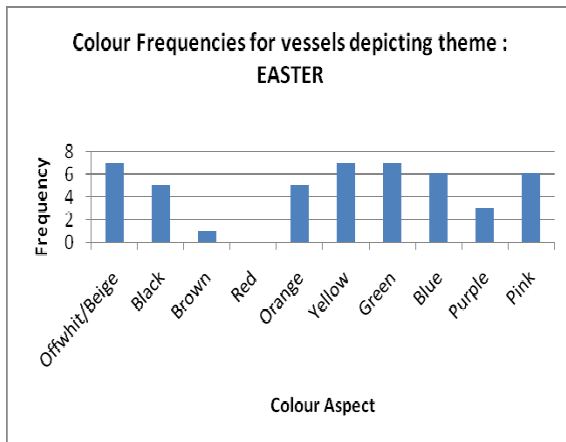


Figure 14: Colour frequencies for vessels depicting theme

Theme: EASTER

Color Aspect	Frequency
Off-white/Beige	7
Black	5
Brown	1
Red	0
Orange	5
Yellow	7
Green	7
Blue	6
Purple	3
Pink	6

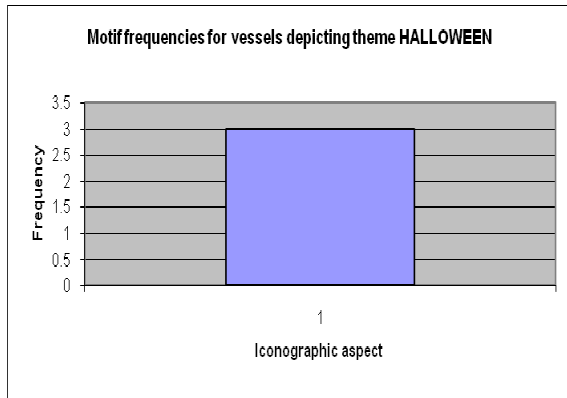
Easter

8. HALLOWEEN

Drinking vessels with Halloween motifs, once again, are most likely to be employed for decorative purposes, or as presents. Because Halloween is another Holiday – just like Easter and Christmas, the potential purposes of mugs that fall into these categories are quite similar.

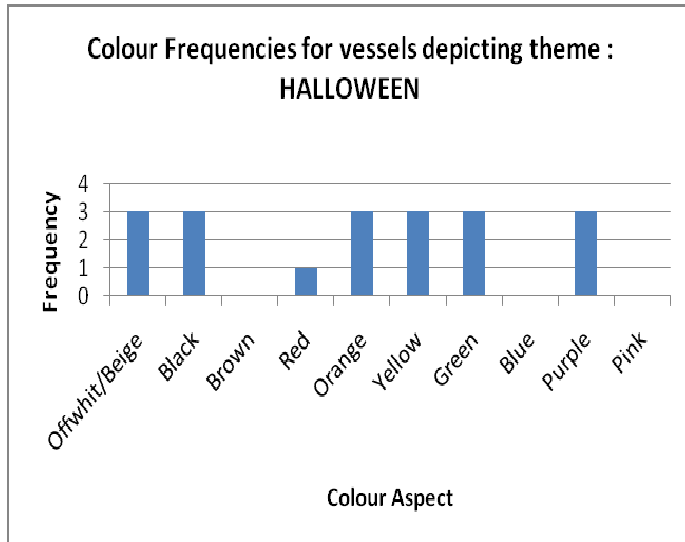
Artefacts: I-15, J-01, J-14

Total: 3



Theme: HALLOWEEN	
Iconographic Aspect	Frequency
Animal and Holiday	3

Figure 15: Motif frequencies for vessels depicting theme Halloween



Theme: HALLOWEEN	
Color Aspect	Frequency
Off-white/Beige	3
Black	3
Brown	0
Red	1
Orange	3
Yellow	3
Green	3
Blue	0
Purple	3
Pink	0

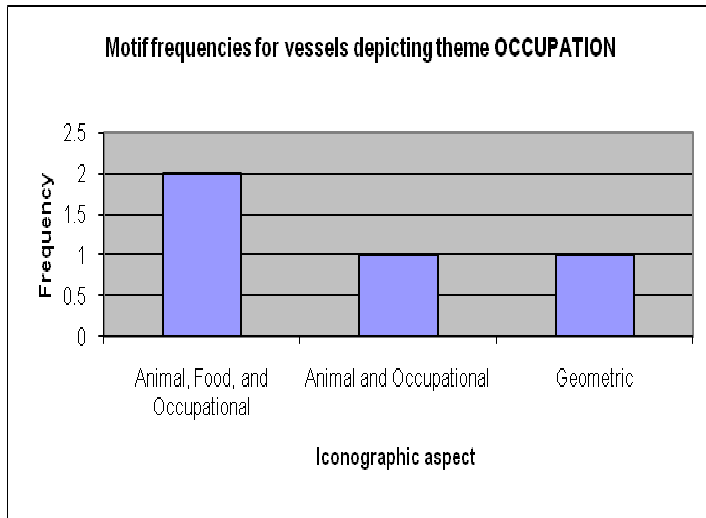
Figure 16: Colour frequencies for vessels depicting theme Halloween

9. OCCUPATION

This group of vessels is dedicated to various professionals and can be used as gifts or personal purchases. Some contain humour. My guess is that these are most often filled with substances like coffee.

Artefacts: F-17, I-01, I-02, N-41

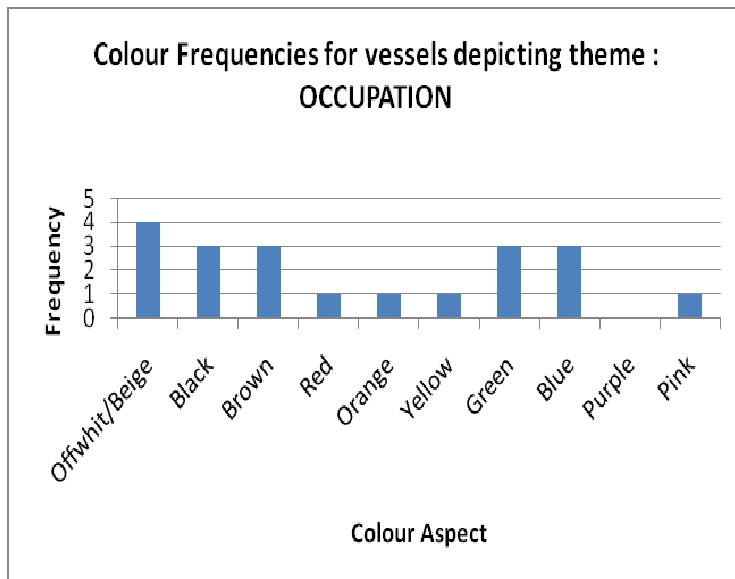
Total: 4



Theme: OCCUPATION

Iconographic aspect	Frequency
Animal, Food, and Occupational	2
Animal and Occupational	1
Geometric	1

Figure 17: Motif frequencies for vessels depicting theme Occupation



Theme: OCCUPATION

Color Aspect	Frequency
Off-white/Beige	4
Black	3
Brown	3
Red	1
Orange	1
Yellow	1
Green	3
Blue	3
Purple	0
Pink	1

Figure 18: Colour frequencies for vessels depicting theme Occupation

10. VACATION

This fraction of mugs likely serves as a souvenir from various regions people have visited. Also, it may be a present from a friend or family member who has travelled. Note that the 'Canada' vessels have not been included in here, because they have an entire category to them-selves.

Artefacts: N-21, N-34, N-45, N-49, N-51

Total: 5

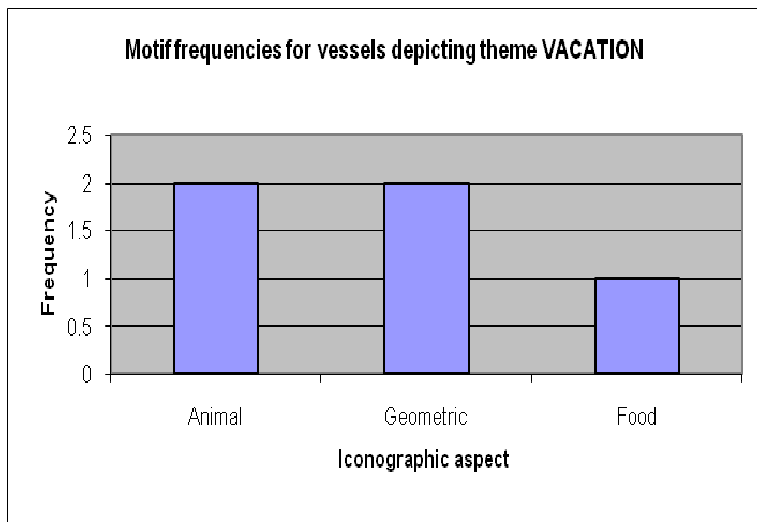


Figure 19: Motif frequencies for vessels depicting theme Vacation

Theme: VACATION

Iconographic aspect	Frequency
Animal	2
Geometric	2
Food	1

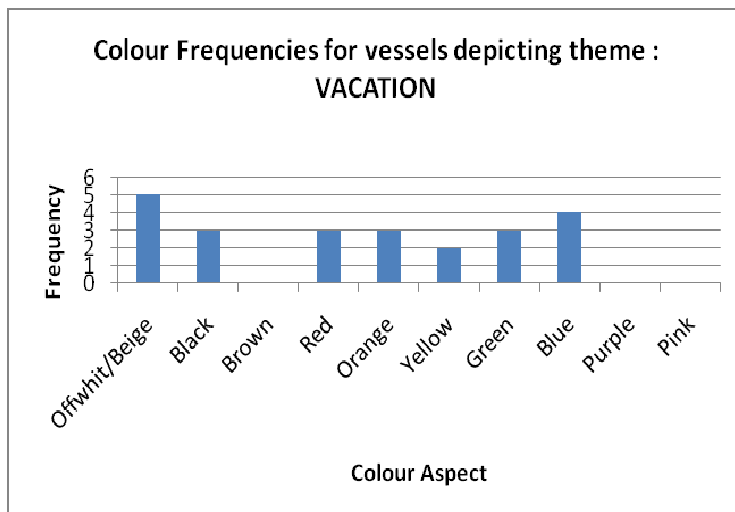


Figure 20: Colour frequencies for vessels depicting theme Vacation

Theme: VACATION

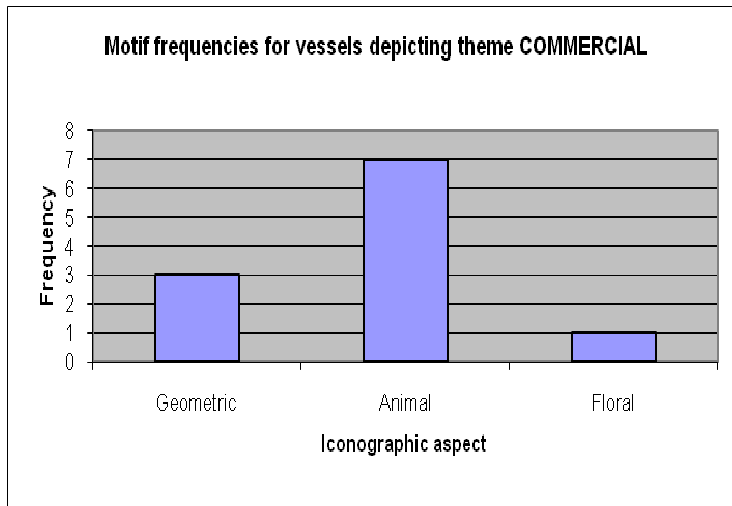
Color Aspect	Frequency
Off-white/Beige	5
Black	3
Brown	0
Red	3
Orange	3
Yellow	2
Green	3
Blue	4
Purple	0
Pink	0

11. COMMERCIAL

This part of our sample can certainly be used to serve as complimentary presents from the commercial industry to their buyers.

Artefacts: E-05, F-16, F-20, K-11, N-10, N-12, N-19, N-29, N-37, N-38, N-57

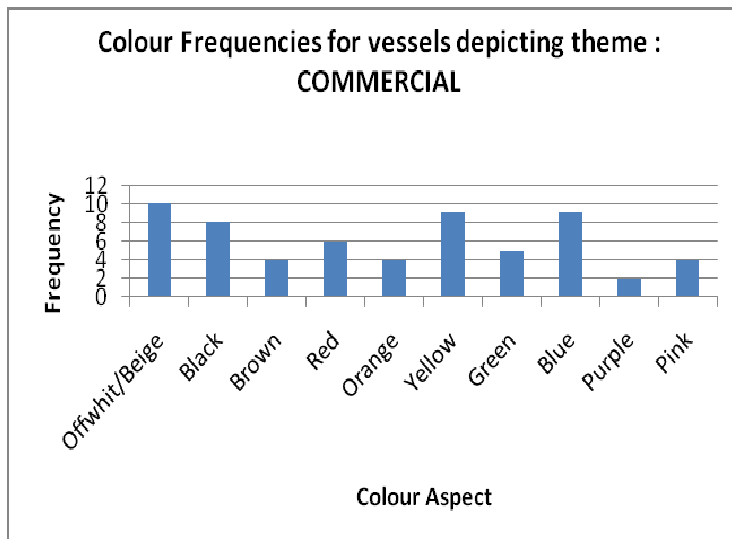
Total: 11



Theme: COMMERCIAL

Iconographic aspect	Frequency
Geometric	3
Animal	7
Floral	1

Figure 21: Motif frequencies for vessels depicting theme Commercial



Theme: COMMERCIAL

Color Aspect	Frequency
Off-white/Beige	10
Black	8
Brown	4
Red	6
Orange	4
Yellow	9
Green	5
Blue	9
Purple	2
Pink	4

Figure 22: Colour frequencies for vessels depicting theme Commercial

12. MISCELLANEOUS

This group of vessels does not fit into any of the aforementioned categories. These are mugs with representations of favourite animals, flowers, cartoons, abstract art, and even completely blank backgrounds. Nevertheless, I have divided them according to their iconographic context, as I have done previously. As for their potential purpose, I suppose that vessels portraying animals, flowers, favourite movie characters and the like can be either personal purchases or prospective gifts for someone who likes a specific animal/floral species. Furthermore, they can be bought for/by someone who has a collection of artefacts dedicated to their favourite animal, flower, cartoon/movie character, etc. Essentially, content-wise, these vessels can be used as pleased by their owners – either for drinking, storage, decoration, personal collection and other.

Artefacts:

Animals : A-10, A-17, B-12, B-14, B-15, B-17, B-18, C-06, C-08, C-10, C-11, D-08, D-13, F-01, F-11, F-12, F-13, F-18, F-20, I-06, I-17, I-18, J-05, J-12, K-07, K-08, K-13, M-02, N-07, N-14, N-15, N-28, N-40, N-42, N-48.

Total: 33

Food: A-12, A-18, C-02, C-03, C-05, F-07, I-05, J-02, J-04, K-06, K-09, M-07, M-15, M-16, N-26, N-39, N-47

Total: 17

Floral: A-19, B-20, C-15, C-20, D-05, E-16, E-19, E-20, F-21, H-01, H-02, H-04, H-05, H-06, I-11, J-08, J-10, J-11, J-18, J-19, K-12, K-14, K-19, L-08, L-11, L-12, L-13, M-03, M-05, M-08, M-09, M-10, M-11, M-12, M-13, M-14, M-17, N-01, N-02, N-08, N-09, N-16, N-17, N-24, N-27, N-32, N-53, N-54, N-56, N-59

Total: 50

Blank Background: A-08, A-09, A-13, A-14, B-04, B-08, C-04, C-09, C-12, C-14, C-17, C-18, D-07, D-10, D-11, D-15, D-20, F-04, F-09, F-10, H-03, I-14, I-16, J-15, K-05, K-15, K-18, K-20, L-09, L-10, M-01, N-04, N-05, N-08, N-18, N-30, N-55, N-58

Total: 38

Geometrical: A-15, A-20, A-21, B-07, B-09, B-13, B-16, C-16, F-15, F-19, G-01, G-02, G-03, I-03, I-08, I-09, J-09, J-16, J-20, K-10, L-06, L-14, L-15, L-16, M-18, M-19, N-03, N-06, N-43, N-46, N-50, N-61

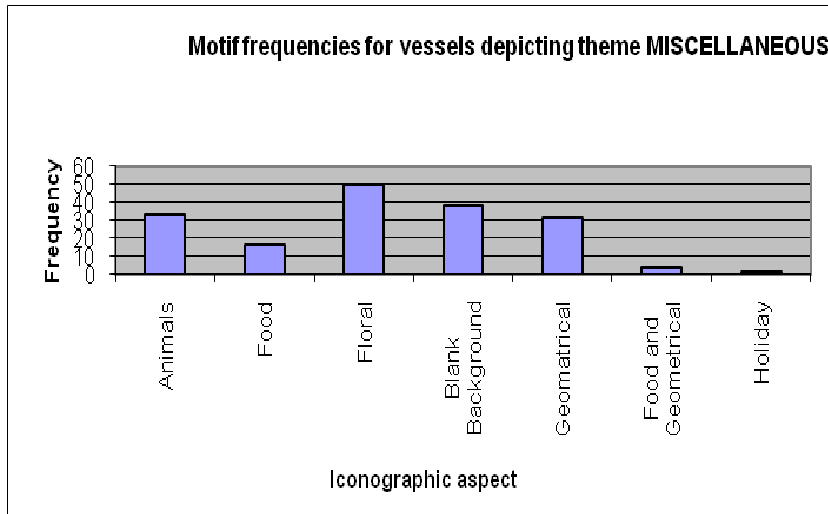
Total: 32

Food and Geometrical: C-07, I-12, C-19, N-31

Total: 4

Holiday: F-08, N-22

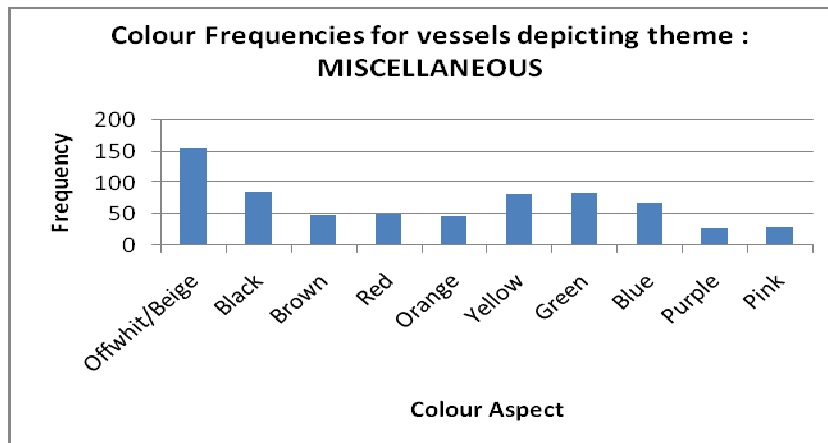
Total: 2



Theme: MISCELLANEOUS

Iconographic aspect	Frequency
Animals	33
Food	17
Floral	50
Blank Background	38
Geometrical	32
Food and Geometrical	4
Holiday	2

Figure 23: Motif frequencies for vessels depicting theme Miscellaneous



Theme: MISCELLANEOUS

Color Aspect	Frequency
Off-white/Beige	154
Black	86
Brown	48
Red	50
Orange	47
Yellow	82
Green	84
Blue	67
Purple	27
Pink	30

Figure 24: Colour frequencies for vessels depicting theme Miscellaneous

Chi Square Value: (refer to Appendix D for complete Chi-square charts for category 12)

- Purpose vs. Iconographic aspect: the P value is 2.55E-05, which is smaller than 0.05 and implies that there is a strong correlation between miscellaneous mugs representing floral motifs.
- Purpose vs. Color: the predominant color in this group is off-white/beige, however the P value is 0.081707, meaning there is no specific relationship between the theme/function and color of these mugs.

Color Frequency Chart

This chart shows how many times a certain number of colors are used on a vessel. The chart represents the full assemblage of 289 mugs.

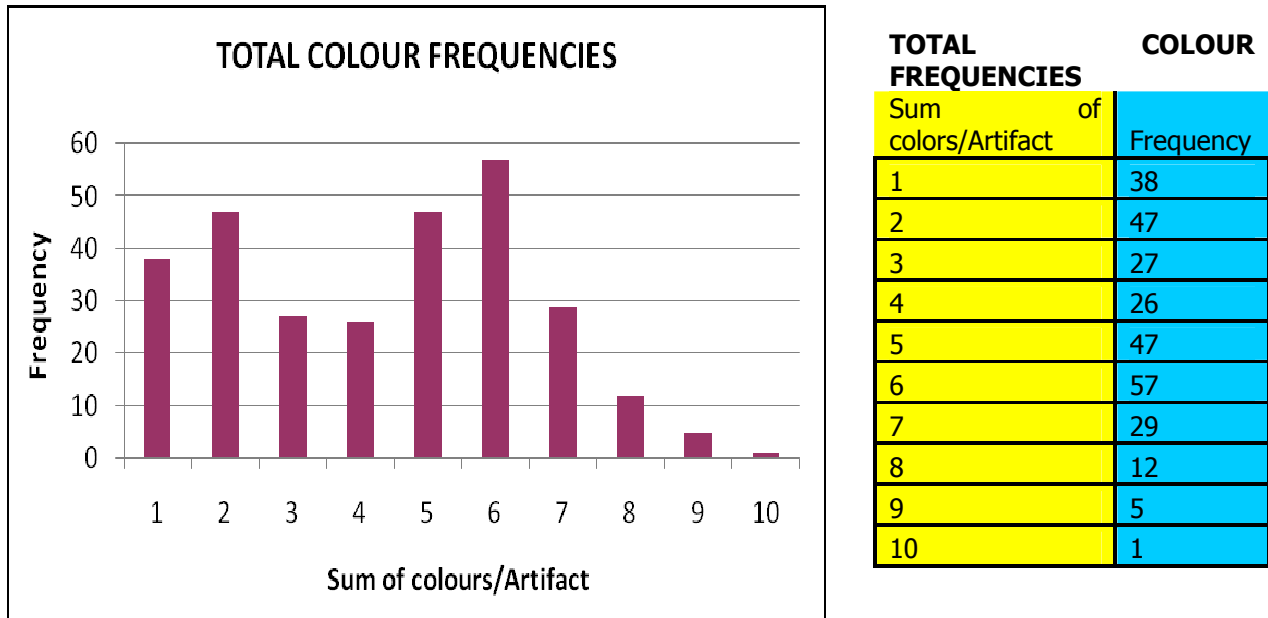


Figure 25: Total colour Frequencies

Discussion

From the aforementioned data, one can see the deduced interpretations of vessel function with respect to decorative aspect, for each of the described categories. At this point, it is necessary to draw conclusions from the frequency histograms and chi-square results. From Figures 1 and 2, it can be seen that the prevalent iconographic motif and colour are floral and off-white/beige, respectively. Moreover, the chi-square tests 'Purpose vs. Motif', and 'Purpose vs. Color', produced P values of 0.301929 and 0.57370205 – both higher than the significance value of 0.05. This indicates that there is no correlation between floral motif, off-white/beige color, and drinking vessels that serve as gifts/souvenirs from Canada/Canada Day celebrations.

To proceed to the next category, Figures 3 and 4 reveal the principal motif and color on vessels used for drinking coffee/coffee-derived beverages. These are: food, the color yellow and off-white/beige. Chi-square analysis for 'Purpose vs. Motif' produced a P value of 5.81E-13, which is much smaller than 0.05 value of significance and suggests that there is a strong correlation between vessels used for drinking coffee, and food as their main iconographic aspect. The second Chi-square test 'Purpose vs. Color' had to be executed for both yellow and off-white/beige, as they were both present 25 times on 25 vessels of this category. However, it was found that only the yellow color is in correlation with the mugs meant to drink coffee, as the P value was found to be 7.77275E-06.

The third category – Love, yielded frequency charts that show a dominant geometric motif and red and off-white/beige as main colors. No Chi-square values could have been calculated for this category, as it only consists of 5 artefacts. The same goes for the following, fourth category – Zodiac (only 3 artefacts). However, the obtained frequency values show a tie between animal, animal and geometric, and animal and floral aspects. What concerns the major colors of this assemblage, they are off-white/beige, black, brown, orange and blue. The next group of vessels fall under the Birthday theme, all feature a holiday and geometric motif, and their most prominent colors are green, yellow and blue.

To continue, mugs of the subsequent grouping illustrate the theme of Christmas. Their major iconographic feature is that of Holiday, and red and off-white/beige are the most popular colors. The constructed Chi-square charts generate a P value of 2.06E-26 for the 'Purpose vs. Motif' test, and 2.2151E-05 for red in the 'Purpose vs. Color' test. This implies that there is, in fact, a significant correlation of Holiday motif, and red color on Christmas mugs.

The theme of Easter entails the eighth assemblage, for the most part representing a holiday, animal and floral motif, with dominant shades such as green, yellow and off-white/beige. Then, Halloween has a category of its own, where mugs mainly depict holiday and animal ornaments, and a variety of colors stand out: off-white/beige, yellow, orange, green, purple, and black. Vacation is a small set of vessels with mostly animals and geometric motifs, and off-white/beige once again as the lead color. Before last, is the Commercial category, with prominent animal imagery and off-white/beige coloration. Finally, the last and largest of all assemblies is the Miscellaneous group, comprising 176 artifacts. It can be seen from the frequency graphs that most of them illustrate floral iconography, and off-white/beige color. From Chi-square test for 'Purpose vs. Motif', a P value of 2.55E-05 was deduced, signifying a relationship between miscellaneous cups that we use for drinking, storage, gifts, or what-not and floral iconographic aspects. Moreover, a second Chi-square analysis for 'Purpose vs. Color' presented a P value of 0.081707, which is higher than 0.05 value of significance, and thus implies that mugs within the miscellaneous category do not correlate with off-white/beige as their predominant color.

The concluding piece of data in this research project is the total color frequency chart, which demonstrates the fact that within the whole sample of 289 artifacts, the majority of the vessels expose a total of 6 colors.

In conclusion, it is important to note the possible sources of error of this research. One of them has been somewhat overcome – because one individual performed the classification tasks, the consistency level is quite adequate. Nevertheless, this does not mean that everyone who examines this assignment will feel the same way. In fact, most people will probably disagree with the established classes, pertaining to both iconographic and color aspects. This error is essentially inevitable, but I have tried to arrange the data in the most simple and obvious way. Furthermore, the most important source of error for this particular research is the small size of the overall sample, which limited the use of chi-square analysis, which initially was supposed to be a major part of this work. Therefore, my main concern for future research in the area of dollarware mug function in relation to its iconographic value and color would be to analyze a much larger sample, in order to get more concrete and accurate results. What is more, is that this type of research would also generate even more insights and questions about dollarware imagery and its potential purpose.

References

Bray, Tamara. 2003. *The Archaeology and Politics of Food and Feasting in Early States and Empires*. Springer Publications

Appendix A: Complete Chi-Square Charts for theme Canada

Purpose vs. Motif

Observed Frequencies:				
		Floral	Non-floral	Total
Canada		9	22	31
No Canada		54	204	258
Total		63	226	289
Expected Frequencies:				
		Floral	Non-floral	Total
Canada		6.76	24.24	31
No Canada		56.24	201.76	258
Total		63	226	289
Level of significance	0.05			
number of rows	2			
number of columns	2			
degrees of freedom	1			
critical value	3.8415			
chi-square test statistic	1.0657			
P	0.301929			

Purpose vs. Color

Observed Frequencies:				
		Off-white/Beige	Non white/Beige	Off- Total
Canada		27	4	31
Non Canada		233	25	258
Total		260	29	289
Expected Frequencies:				
		Off-white/Beige	Non white/Beige	Off- Total
Canada		27.89	3.11	31
Non Canada		232.11	25.89	258
Total		260	29	289
Level of significance	0.05			

number of rows	2
number of columns	2
degrees of freedom	1
critical value	3.8415
chi-square test statistic	0.3165
P	0.57370205

Appendix B: Complete Chi-square Charts for Theme Coffee

Purpose/Message vs. Motif

Observed Frequencies:			Food	No Food	Total
	Coffee	14	11	25	
	No Coffee	18	246	264	
	Total	32	257	289	
Expected Frequencies:			Food	No Food	Total
	Coffee	5.45	19.55	25	
	No Coffee	57.55	206.45	264	
	Total	63	226	289	
Level of significance	0.05				
number of rows	2				
number of columns	2				
degrees of freedom	1				
critical value	3.8415				
chi-square test statistic	#NUM!				
P	5.81E-13				

Purpose/Message vs. Colour

Off-white/Beige

Observed Frequencies:			
	Off-white/Beige	Non white/Beige	Off- Total
Coffee	25	0	25
Non Coffee	235	29	264
Total	260	29	289

Expected Frequencies:			
	Off-white/Beige	Non white/Beige	Off- Total
Coffee	22.49	2.51	25
Non Coffee	237.51	26.49	264
Total	260	29	289

Level of significance	0.05
number of rows	2
number of columns	2
degrees of freedom	1
critical value	3.8415
chi-square test statistic	3.0525
P	0.080611974

Yellow:

Observed Frequencies:			
	Yellow	Non Yellow	Total
Non Coffee	142	122	264
Total	167	122	289

Expected Frequencies:			
	Yellow	Non Yellow	Total
Coffee	14.45	10.55	25
Non Coffee	152.55	111.45	264
Total	167	122	289

Level of significance	0.05
number of rows	2
number of columns	2
degrees of freedom	1
critical value	3.8415
chi-square test statistic	19.9930
P	7.77275E-06

Appendix C: Complete Chi-square Charts for theme Christmas

Purpose/Message vs. Motif:

Observed Frequencies:				
		Holiday	No Holiday	Total
Christmas		13	1	14
No Christmas		2	273	275
Total		15	274	289
Expected Frequencies:				
		Holiday	No Holiday	Total
Christmas		3.05	10.95	14
No Christmas		59.95	215.05	275
Total		63	226	289
Level of significance	0.05			
number of rows	2			
number of columns	2			
degrees of freedom	1			
critical value	3.8415			
chi-square test statistic	#NUM!			
P	2.06E-26			

Purpose/Message vs. Color:

Off-white/Beige:

Observed Frequencies:				
		Off-white/Beige	Non white/Beige	Off-Total
Christmas		14	0	14
Non Christmas		246	29	275
Total		260	29	289
Expected Frequencies:				
		Off-white/Beige	Non white/Beige	Off-Total
Christmas		12.60	1.40	14
Non Christmas		247.40	27.60	275
Total		260	29	289
Level of significance	0.05			
number of rows	2			
number of columns	2			
degrees of freedom	1			
critical value	3.8415			
chi-square test	1.6410			

statistic	
P	0.200184

Red:

Observed Frequencies:				
		Red	Non Red	Total
Christmas		14	0	14
Non Christmas		116	159	275
Total		130	159	289
Expected Frequencies:				
		Red	Non Red	Total
Christmas		6.30	7.70	14
Non Christmas		123.70	151.30	275
Total		130	159	289
Level of significance	0.05			
number of rows	2			
number of columns	2			
degrees of freedom	1			
critical value	3.8415			
chi-square test statistic	17.9948			
P	2.2151E-05			

Appendix D: Complete Chi-square Charts for Theme Miscellaneous

Purpose/Message vs. Motif:

Observed Frequencies:			Floral	Non-floral	Total
	Miscellaneous	51	116	167	
	Not Miscellaneous	12	110	122	
	Total	63	226	289	
Expected Frequencies:			Floral	Non-floral	Total
	Miscellaneous	36.40	130.60	167	
	Not Miscellaneous	26.60	95.40	122	
	Total	63	226	289	
Level of significance		0.05			
number of rows		2			
number of columns		2			
degrees of freedom		1			
critical value		3.8415			
chi-square test statistic		17.7250			
P		2.55E-05			

Purpose/Message vs. Color:

Observed Frequencies:			Off-white/Beige	Non white/Beige	Off-	Total
	Miscellaneous	154	22			176
	Non Miscellaneous	106	7			113
	Total	260	29			289
Expected Frequencies:			Off-white/Beige	Non white/Beige	Off-	Total
	Miscellaneous	158.34	17.66			176
	Non Miscellaneous	101.66	11.34			113
	Total	260	29			289
Level of significance		0.05				
number of rows		2				
number of columns		2				
degrees of freedom		1				
critical value		3.8415				
chi-square test statistic		3.0306				
P		0.081707				