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Geographic Content Analysis of the Cartoons of Gallipoli 1915

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Abstract

Artifacts such as cartoons contain explicit and implicit evidence of the geography of war. As such, they can offer political, reactive and personal perspectives that are not directly represented in conventional war maps. Maps and cartoons can complement each other in providing a more complete window into war geography. Cartoons relating to the Gallipoli campaign of 1915 were collated and coded for three classes, each of which contained a number of categories: a) the perspective (propaganda, satire, personal); b) the type of geographic evidence embodied in them (text, map, graphic, symbol, metaphor); and c) the country of origin. Category counts and correlation analysis were used to identify associations between category classes and between categories. It was found that Australian and Turkish cartoons share a distinctive pattern of characteristics, that embedded maps are a common feature of propaganda cartoons, and that graphics are associated with personal and satirical cartoons. Satirical cartoons also employ metaphor. Associations among categories within classes are also found, for example, symbolism and metaphor are positively correlated while propaganda is negatively correlated with satirical and personal perspectives. It was reasoned that these patterns emerge through various imperatives, including a political need to deploy a geographic shorthand (i.e. maps) to convey complex geographic concepts, a personal literal rendering of the war environment (i.e. through graphics) and the professional cartoonist's use of symbolism and metaphor to communicate complex concepts.

Keywords: Cartoons, geographic evidence, perspective, analysis, World War I

Introduction

Cartoons and cartoon-like rendering, as seen in official posters and personal sketches, have been used to represent, comment on and motivate matters of war as in other aspects of life. As such, they are highly effective communication media and like other forms of art, have persuasive, documentary and emotive power. Maps, as supreme recorders and communicators of geographical aspects, have been essential records of the geography of war. Troop movements, physical geography (topography), human geography (settlements and transport infrastructure) have all been effectively represented using maps.

However, the content of war maps is very much presented at a synoptic and aggregate level. It tends to reveal little about the situation on the ground facing the individual soldier, those in command and back in the home country. Having said that, individualistic expression manifests in map annotations that record personal geographies of war (Cartwright 2012). War maps also reveal little about the processes of propaganda / recruitment and satirical responses to war.

Artifacts such as cartoons, prose, poems, fine art and music can effectively record these personal aspects of war. By extension, such artifacts have a high likelihood of implicitly or explicitly containing a situated geography too. For example, Kleeman (2006) analysed the geography contained in cartoons. Such geographies tend to be the ones not captured by maps. This is the geography of 'place' rather than 'space'.

This is the motivation for exploring cartoons as an example type of artifact, for the geography that they can reveal. They (as a body of work) have the potential to provide a hitherto undetected pattern of geography that

complements the conventional geography stored in maps. Cartoon-like representations relating to the Gallipoli campaign of 1915 will be explored in this context.

Source of cartoons and categorisation of their geography

War cartoons have been published on posters, in magazines, newspapers or in collections of personal content (e.g. the Anzac book – Australian War Memorial 1916). An attempt was made to classify Gallipoli cartoons according to how geography was embedded in them. Moore & Cartwright (2014) adapted a set of categories used by Kleeman (2006) in extracting the geographic content of cartoons, where: geography is embodied in captions, exaggeration and distortion, caricatures, stereotyping, symbolism, visual metaphors, humour and perspectives. In the Gallipoli cartoon project, geography is considered to be contained in text, in graphics, as a symbolic element, as a visual metaphor, and as a map that forms part of the cartoon. Cartoons not having geographical content were not used in the study.

Figure 1: The Anzac's Farewell, Laurence Cameron, 1916 (National Library of New Zealand 2014)

Cutting across these geography evidence types is the concept of perspectives describing the purpose of the cartoon. For the Gallipoli project, the three perspectives adopted are for propaganda, satirical or personal. Relating to Kleeman's description of 'perspective', 'the position, stance or point of view adopted by the cartoonist', the line adopted here is less specific and pertains to a group of cartoons and their creators, adopting a distinct shared mindset. We define propaganda cartoons as entities that are intended to 'persuade' particular groups of people, representing a political group (Ross 2002). Although satire can also have political agency, we put cartoons that react to the official line but do not represent any specific group in this category.

Examples were presented for each of the 15 unique combinations of geography evidence type and perspective (Moore & Cartwright 2014) as part of a process of 'ground truthing' (Cartwright et al. 2001), relating cartoons to verifying objective documentary evidence of the time (e.g. photographs). For example, Figure 1 shows a satirical cartoon of the Gallipoli evacuation, where geography is represented graphically through depiction of landscape, with possibly the presence of a coastline. There is a colonial hierarchy suggested here too, the Anzac soldier being restrained by the British officer in the face of the Turkish taunting.

Methodology

In this next stage of the study, the research questions to be answered were: Did the type of geographic evidence vary significantly, depending on country of origin? That is, are the type of evidence and where the cartoon comes from correlated? Also, did the geographic evidence type vary significantly, depending on the perspective?

Categorisation of cartoons

Quantitative Content Analysis (QCA, Rose 2007) is often used to answer questions pertaining to a body of artifacts. Meuhlenhaus (2011) applied the technique to "persuasive" maps of the last 200 years, noting that while human geographers often use QCA to study images, studies like this were rare in cartography. A key step in QCA is coding, the definition of classes and categories to be looked for in the artifacts (which need to be exhaustive, exclusive and make sense) and subsequent labelling of classes and categories as they are found.

Examples of coding include Figure 2a, an Australian cartoon that has a propaganda perspective, containing explicit map and symbolic geographic evidence. Figure 2b is German, satirical, and contains symbolic

geography, a visual metaphor employing a lion–lion tamer analogy, and text. Figure 2c is a cartoon published in Australian magazine The Bulletin, containing graphic geography, with a burrow metaphor and although satirical in intent, also characterized by personal point of view (i.e. trench conditions actually experienced by the soldier).

At the end of the coding process (performed by the lead author on cartoons relating to the Gallipoli campaign), we have produced a matrix of present (1) or absent (0) values in each category for each cartoon. It is important to note that both present and absent are measures of cartoon content and that any cartoon may be characterized by a value of present in more than one category (Figure 3a). These are multiple response variables, with non-mutually exclusive categories.

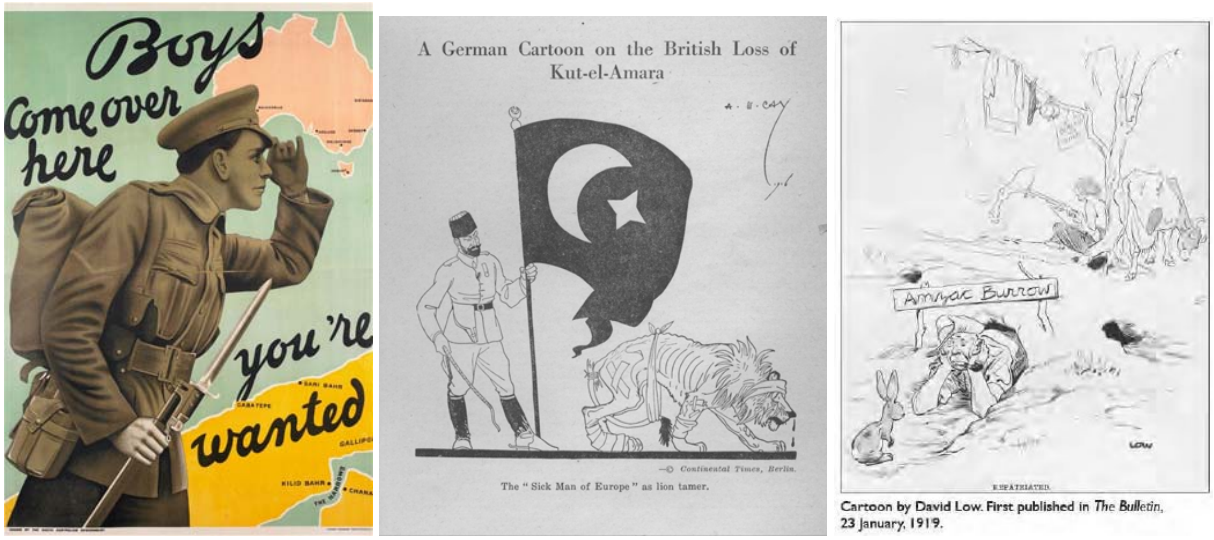

Figure 2: a) Boys Come Over Here, You're Wanted (Museum Victoria 2014); b) The "Sick Man of Europe" as lion tamer (Steuer 2014); c) Anzac Burrow (Australian Government 2014).

Analysis of cartoons

Having categorized our cartoons using coding, statistical tools were next used to look for associations among the categories. Because each class contains more than one category, we can examine both across-class and intra-class associations. The country of origin class is exclusive but the perspective and geographic evidence classes are not. We thus might expect some compound categories, for example graphic and symbolic content used together, to be common, while others are rare. Moreover, the discursive style of particular countries may favour particular compound categories.

Category associations may be examined in several ways. We used raw attribute (presence or absence in a category) counts to look for compound categories (Figure 3b). Both the counts and the raw attribute data were further studied using correlation and cluster analysis. We compute Pearson's correlation coefficient (Davis 1986) and a corresponding level of significance.

Cluster analysis seeks groupings among objects such that objects in the same group are more similar to each other than to objects in other groups. Here, we are interested in relatedness among cartoon attributes (presence or absence of categories) and seek to group categories, not the cartoons themselves. Put another way, the category values are observations made in the cartoon space. Categories that are closer to each other in the cartoon space are more similar to each other than categories that are farther away from each other in this space. Suppose we are interested in categories *A* and *B.* Each cartoon has either a 1 or a 0 value for its observations *a* and *b*. If cartoons tend to have values of 1 for both *a* and *b*, then the categories *A* and *B* will be close together in cartoon space and the cluster analysis should group them together.

We used hierarchical agglomerative clustering, a process that joins similar observations together, in successive steps, starting with all possible pairs and working upward toward one group containing all observations (Davis 1986, p 503). This approach requires a measure of dissimilarity and we used scaled Euclidean distances *d* between individual cartoon category pairs (*a*, *b*) in (*A*, *B*)

$$d = \sqrt{\sum_{i=1}^{N} \left(\frac{a_i}{s_a} - \frac{b_i}{s_b}\right)^2}$$

in which the number of cartoons is *N*, and s_a abd s_b are standard deviations. The resulting metrics are clustered using a minimum distance criteria for the distance *d*:

$$min\{d(a,b): a \in A, b \in B\}$$

as enacted by the Matlab function "linkage" (MathWorks 2014). When plotted in a dendrogram, distances along branches indicate the degree of intergroup dissimilarity.

Results

Attribute summary

Across the 90 cartoons collected so far, we have identified 180 positive occurrences of geographical evidence elements in 5 categories and 118 positive occurrences of perspective in 3 categories (Table 1). All categories are well represented, with the graphical type of evidence and satire perspective featuring with higher frequency.

Table 1: Positive occurrences of categories in the geographic evidence and perspectives variables

Attribute	Total positive occurrences
Map object	21
Graphical object	61
Symbolic object	43
Metaphor object	26
Text object	29
Propaganda perspective	36
Satire perspective	51
Personal perspective	31

Figure 3a shows the categories within variables for each of the cartoons. The graphic has cartoons grouped by country along the y-axis with the x-axis arranging variable in the order country of origin, type of geographic evidence and perspective (for category codes see caption). We can see there is a strong specificity in Turkish cartoons for propaganda perspective and map and graphic evidence types. The majority of Australian cartoons collated have a compound satirical and personal perspective, employing graphics to depict geography. The other countries of origin have cartoon populations that are more diffuse in their perspectives and evidence types, apart from UK cartoons, which were almost all satirical only.

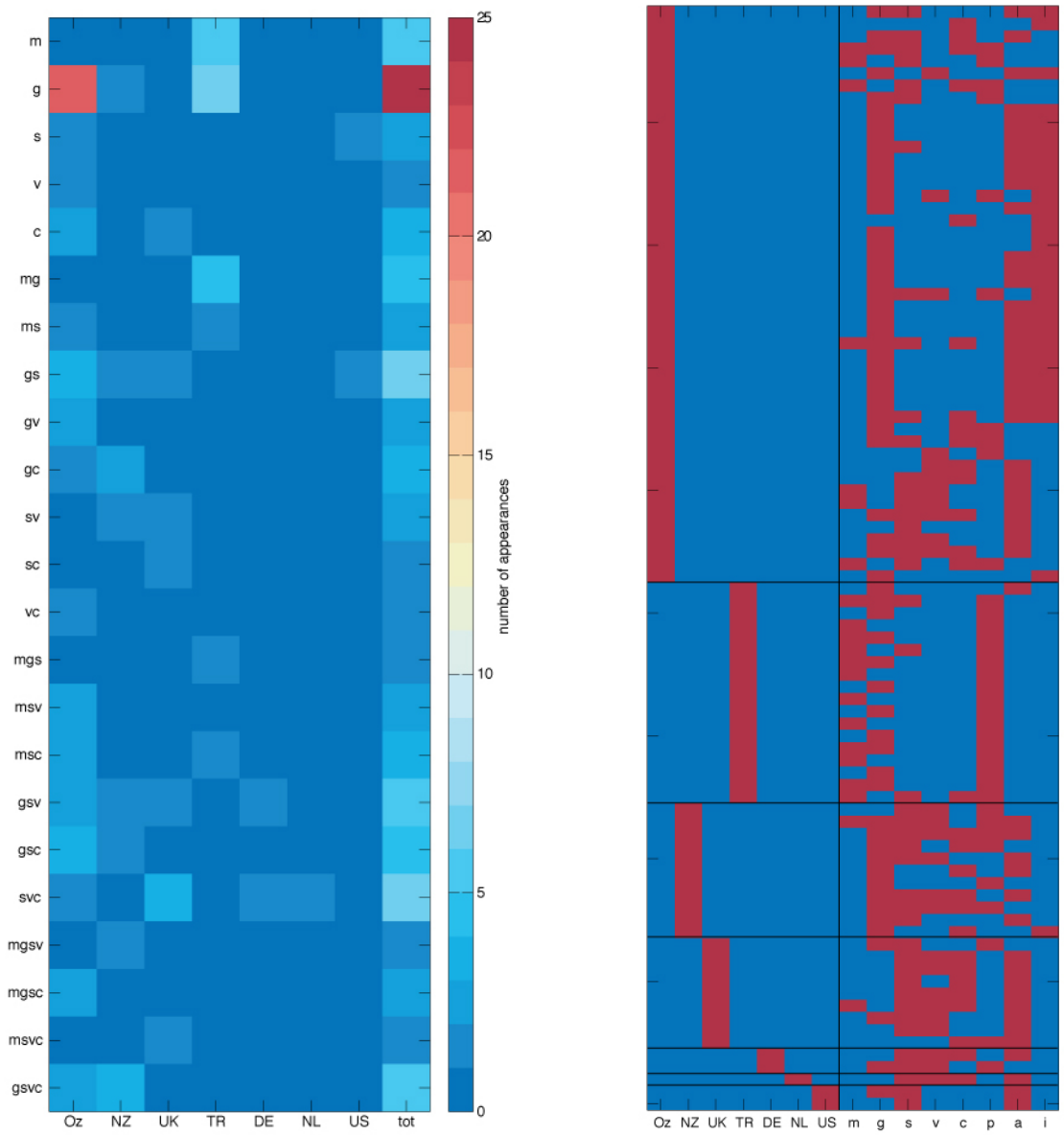

Figure 3: a) Graphical summary of each cartoon (listed along y-axis; codes along x-axis are for country: Oz = Australia, NZ = New Zealand, UK = United Kingdom, TR = Turkey, DE = Germany, NL = Netherlands, US = United States; for evidence type: m = map, g = graphic, s = symbol, v = visual metaphor, c = text; for perspective: p = propaganda, a = satire, I = personal); b) Graphical cross-tabulation of country-of-origin with type of geographic evidence (single and compond categories; tot = total)

Both presence and absence of evidence elements are attributes of a cartoon, in that both inclusion and omission make meaning. We are thus interested in how the categories associate with each other and with countries of origin in this high-dimensional space. The five geographical evidence elements identified in the cartoons may be combined in 31 different ways (ignoring the 0 elements case). Of those, 21 different categories and compound categories appear in the 90 cartoons, and 10 appear more than twice. Figure 3b visually highlights distinctive combinations of categories across countries. Notwithstanding the effects of absolute counts (just under half of the cartoons collated were Australian in origin), the dominance of graphics as a geographic evidence type shows here, both on its own or combined with symbolic or symbolic-and metaphorical elements.

Attribute relationships

We use the counts (Figure 3b) to quantify similarity between country pairs by computing Pearson correlation coefficients across countries (Table 2). Interestingly, an Anzac association between Australia and New Zealand that might be expected on cultural grounds, is not borne out by the statistical evidence. However, there is a

relatively large and significant positive correlation between Australian cartoons and Turkish cartoons. Other countries (USA, Netherlands and Germany) were not included due to low total counts.

Table 2: Comparison of geographic evidence content by country using the Pearson correlation coefficient (ranges from -1 to +1, negative correlation to positive correlation; level of significance in parentheses), with non-zero category permutations (listed in Figure 3b).

	Turkey	UK	New Zealand
Australia	0.57 (0.004)	-0.12 (0.57)	0.20 (0.37)
New Zealand	-0.09 (0.69)	-0.10 (0.64)	
United Kingdom	-0.26 (0.24)		

Next, the associations between evidence type and perspective categories were examined, also using Pearson's correlation coefficient. The results in Table 3 indicate a significant positive correlation of maps in cartoons with the propaganda perspective, and weaker negative correlations of maps with personal and satire perspectives, and with graphical evidence. Graphics themselves are positively correlated with personal cartoons and have weaker negative correlations with the other evidence types. Use of symbolism has a relatively strong negative association with personal cartoons and positive association with text and metaphor evidence types (as well as the weak negative graphics correlation). Use of visual metaphor has weak correlations with personal (negative) and satirical (positive) perspectives as well as text evidence (positive) and the aforementioned graphics (negative) and symbolism (strong positive). Text has a weak negative correlation with the personal perspective, as well as the significant correlations with 3 other evidence types noted before. As well as the link to maps, propaganda has a very strong negative correlation with the satirical perspective and a relatively strong negative correlation with the personal perspective. Finally, personal cartoons have significant relationship with all the other categories, including a weak positive one with satirical cartoons.

Table 3: Using the Pearson correlation coefficient to detect associations for individual geographic evidence and perspective attributes for all cartoons (level of significance in parentheses).

	personal	satirical	propaganda	text	metaphor	symbolism	graphics
map	-0.34 (0.001)	-0.37 (<0.001)	0.46 (<0.001)	-0.04 (0.69)	-0.12 (0.26)	0.10 (0.33)	-0.35 (0.001)
graphics	0.40 (<0.001)	0.07 (0.52)	-0.07 (0.52)	-0.29 (0.01)	-0.24 (0.02)	-0.24 (0.02)	
symbolism	-0.46 (<0.001)	0.16 (0.12)	-0.01 (0.93)	0.39 (<0.001)	0.47 (<0.001)		
metaphor	-0.31 (0.003)	0.26 (0.01)	-0.12 (0.26)	0.24 (0.02)			
text	-0.25 (0.02)	0.08 (0.48)	-0.08 (0.47)				
propaganda	-0.50 (<0.001)	-0.80 (<0.001)					
satirical	0.26 (0.015)						

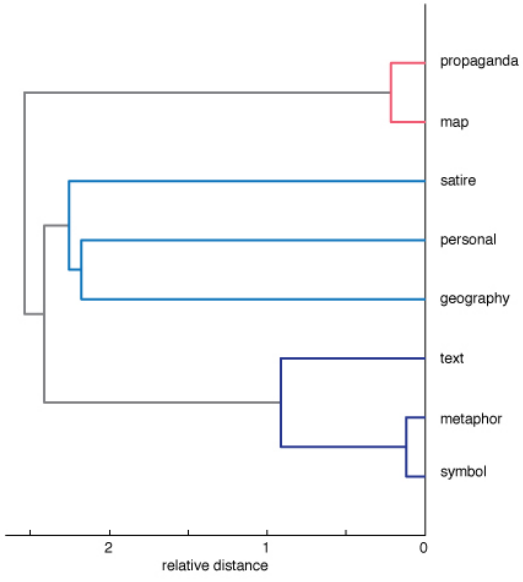

Figure 4: Agglomerative hierarchical cluster dendrogram of geographic evidence and perspective categories.

The hierarchical cluster analysis (Fig 4) supports and refines the inferences drawn from the correlation analysis. The dendrogram forms three main branches: propaganda and maps in one group, satire, personal perspectives, and graphical geographical evidence in a second, and the use of symbolism, metaphor and text in another.

Differences in link heights along a particular branch of the dendrogram are a metric for distinctness between the groups. Thus, in addition to supporting the finding that maps in cartoons are closely associated with propaganda, we see that this grouping is distant from all other clusters. Metaphor and symbolism are relatively strongly related while their connection to text evidence is more distant. Finally, satire, personal perspectives, and graphical geographical evidence are more closely related to each other than to other categories, but the relationships are relatively distant.

Discussion and Conclusions

The research questions to be answered were: Did the type of geographic evidence vary significantly, depending on country of origin? That is, are the type of evidence and where the cartoon comes from correlated? Also, did the geographic evidence type vary significantly, depending on the perspective?

Graphical display of the raw data (Figure 3a) suggests that some countries' cartoons are linked with certain perspectives and evidence types – Turkey's propaganda cartoons that featured maps and graphics, or Australia's satirical / personal cartoons that featured graphics. Elements of these relationships are borne out by the perspective / evidence type part of the analysis, though not linked to country. A strong positive association is indicated between Turkey and Australia though, probably due to a shared graphics emphasis (Australia had a few propaganda cartoons too). However, the anticipated similarity between Australia and New Zealand never materialized.

There are a few strong associations when comparing the perspective and evidence type variables. Propaganda cartoons are strongly linked with embedded maps, where it seems to form a geographical shorthand for relating good news in the Turkish campaign or, in the Australian case, maps of Gallipoli are inserted into recruitment posters (Figure 2a), sometimes alongside Australia itself. This is perhaps to emphasize the "otherness" of the remote place, and with it, instilling a sense of a chance to travel, of adventure to be had. Satirical cartoons explicitly do not tend to use maps, though there are a few notable exceptions, relying instead on use of visual metaphor (Table 3) along with graphics (Figure 4) to communicate complex ideas (e.g. Figure 2b and 2c) – this is part of the professional cartoonist's art. Personal cartoons have a distinct emphasis on geography expressed in graphics only (Table 3 and Figure 4), the physical environment experienced by the artist is displayed literally, at the expense of all other forms of geographic expression (Table 3).

Finally, strong intra-variable (between category) relationships were discovered. Chief amongst these was a distinct negative association between propaganda and the other two perspectives (Table 3, Figure 4). This is to be expected, as the satirical stance, as defined for this project, is opposed to the political representation. In the case of recruitment, the government has to depict the conflict in as inviting a way as possible, glossing over the horror of conditions on the ground. Inevitably, this will be at odds with the journalistic satire imperative to "tell it how it is" and the personal perspective, which has the truth of experience. This overlap between the satirical and personal viewpoints is also weakly represented in the results.

The results indicate that various combinations of geographic evidence elements are used to create meaning. We suggest that different groupings are indicative of different discursive modes. Some combinations, for example, symbolism and metaphor, are common, and are reinforced by the correlation results (Table 3, Figure 4; example in Figure 2b). Both concepts are related, since they are both trying to represent something with something else. Hence the Australian soldier in Figure 2a is symbolic or representative of all Australian soldiers; the lion –lion tamer relationship is a metaphor as it represents something more complex. The addition of text to this grouping (Figure 4; weak correlation in Table 3) may suggest that metaphors and symbols need a bit of explaining - would the Figure 2b cartoon work as well if you removed the explanatory caption?

Use of graphics to depict geography seems to mean that other forms of geographic expression tend not to be favoured, in a weak sense (Table 3, Figure 4). With maps (the strongest negative relationship) it may be that physical depictions of geography in addition may be superfluous, as maps are very good at summarizing landscape features anyway. Maps were also the furthest away from the other types of geographic evidence (Figure 4) having no significant relationship with anything other than graphics (Table 3).

Throughout this discussion, it should be noted that these results may be heavily biased towards cartoons of particular characteristics purely because of how they were sourced. For example, while personal Anzac cartoons were compiled in the Anzac Book and were relatively easy to access, there is no Turkish equivalent. This inevitably skews the sample towards giving certain results. Also, the wide availability of Anzac cartoons means

that they form the majority of cartoons, which should also be taken into account (the correlation coefficients do address size through normalization, however).

For the next stage, there is enough specific geography here to place the cartoon in space and time. Referring to Figure 1, since the evacuation occurred at known points and at known times, this is a geographical facet that can be mapped relatively accurately. This transfer of geography from implicit cartoon content to explicit map content is the next stage of analysis. Reuschel et al. (2009) were working with similarly vague concepts when developing their electronic Literary Atlas of Europe, where geographic areas suggested by literature were rendered as diffuse clouds and specific place points conveyed their uncertainty by shifting to a different spatial location every few seconds. The Figure 1 cartoon and the other cartoons encountered will afford this plotting of the elicited vague mapped geography.

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