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Ever-Changing Flags: Trend-Driven Symbols of Identity

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One of the symbols of a nation is its flag, which plays an important role in building and maintaining a sense of identity. Changes that occur in a country throughout history are often reflected on the design of its flag, whose elements bear meaning and are part of the country's culture. In this paper, we explore the possibility of using a flag to also represent changes that occur in shorter timeframes. We present a system that applies visual transformations to the flag of a country, based on trending topics inferred from news sources. The impact of generated flags is assessed using a user-study, focused on perception and interpretation. The developed system has the potential to be exploited for multiple purposes—e.g. event visualization—and can be used to make the viewer question the limits of a nation's identity.

1. Introduction

The national flag is one of the symbols that help the formation and maintenance of the identity of a nation (Elgenius 2011). Geisler (2005) states that maintaining a collective identity is an "ongoing, dynamic process in which historical symbolic meanings are constantly recycled, actualised, challenged, renegotiated, and reconfirmed". The transformations that occur to a flag can often be linked to changes in the entity that the flag represents—e.g. political changes. In the past, the dissemination of these changes was slow and of limited access. As such, modifications to the design of a flag are normally sporadic and, in most cases, a flag remains unchanged for long periods. However, our society has now easy access to global information, which results in a sense of constant change. In addition to the sense of identity, a nation can also be assigned a "mood"—i.e. what is happening in the country at the moment. In this paper, we present a system that generates flags based on trending topics of countries, retrieved from real-time news. These topics are used to drive a process of visual blending that alters the original flag of the country. In this sense, the produced flags can be seen as visual representations of the current "mood" of the country.

On the other hand, a flag is, in most cases, conceptually grounded—i.e. its structure and elements have associated meanings—and changes applied to it should take this into account—e.g. a change of colour carries a meaning, which will be assigned to the flag. As such, our process of generating a flag consists not only in producing a design but also its explanation. In any case, a generated design should not be taken as entirely new but as a transformation that still bears resemblance to the original one. To assess how the produced flags are perceived and interpreted by participants, we conducted a user-study. Overall, the flags seem to have the potential to make the participant question the limits of a nation's identity but also to be explored as a means to raise awareness about current events—e.g. an oil spill that happened in Brazil. Moreover, the developed system can be used for several purposes—e.g. visualization—and in multiple contexts—e.g. as a web app or an installation.

The remainder of this paper is organised as follows: Section 2 summarises the related work; Section 3 presents our approach; Section 4 describes a study conducted to users; Section 5 provides a general discussion; and Section 6 presents conclusions and directions for future work.

2. Related Work

Flags are normally custom-made and designed using elements that have meanings assigned to them. Nonetheless, more systematic strategies can also be used to produce flags. One strategy consists in generating flags from scratch using a generative grammar. For example, the Universal Authority for National Flag Registration (Groot 2000) developed a flag coding system

in which a flag is composed of: (i) a background colour, (ii) a pattern or a combination of patterns, and (iii) a symbol (optional). This system not only indexed UN member countries but produced thousands of unclaimed flags. Another example is the web app *Scrontch's Flag Designer*[1] by Lars Ruoff, which allows the user to produce flags based on a grammar with three element categories: division, overlay and symbol. Similarly, Whigham et al. (2009) defined a "flag language"—composed of basic elements (e.g. background) and functions (e.g. clipping)—and used an interactive evolutionary approach to produce new flags.

Another way of producing flags is by combining existing ones—a process often referred to as visual blending (Cunha, Martins, and Machado 2018). Examples of visual blending of flags are: the proposed EU flag by Rem Koolhaas[2], which used a barcode style featuring the colours of EU countries; the fictional flags designed for the Amazon's mini-series *The Man In The High Castle* (Heller 2015) by merging existing ones; or the combination of two flags using a masking technique to represent nationality deception by ships seajacked by Somali pirates[3] (Pater 2012). There are several computational systems that use a visual blending approach to flag production. For example *Net.flag*, a project commissioned in 2002 by the Guggenheim Museum, is an online flag editor in which flags can be produced by removing or adding elements belonging to existing flags (Napier 2002). Similarly, the project *Atlas of Potential Nations: Computationally Designed Nations*[4] produces names and flags for new nations by combining the existing flag elements. In addition to these projects, there are also Twitter bots that generate flags—e.g. the *Flags Mashup Bot*[5] mixes existing flags by applying the colours of one flag to the elements of another; or the *FlagBot*[6] produces new flags by putting together elements of several existing flags and changing their colours. From all these examples of flag production, none seems to explicitly explore what we consider the most relevant aspect in flag generation: the meaning of the flag.

3. Our Approach

The *Net.flag* project is described as an "ever-changing flag of the Internet", which anyone could alter upon visiting the website (Napier 2002). This concept is aligned with our approach, questioning the idea of a flag as an object with static nature.

The notion of "mutable flag" gains even more significance when combined with a sense of reactivity. We use the term "reactive" (Richardson 2017) to characterize something that changes according to external input, as defined by Martins et al. (2019). Examples of reactive systems are the visual identity designed by Neue[7] for the Nordkyn peninsula—the graphic mark changes according to data on weather conditions at each moment—and a system that designs posters using data gathered from the surrounding environment related to weather and interaction from people (Rebelo et al. 2019).

1. http://flag-designer.appspot.com/, accessed April 2020.

2. https://oma.eu/projects/eu-barcode, accessed April 2020.

3. http://www.doublestandardsofpiracy.org, accessed April 2020.

4. http://emblemmatic.org/atlas/, accessed April 2020.

5. https://twitter.com/FlagsMashupBot/, accessed April 2020.

6. https://twitter.com/FlagBot1, accessed April 2020.

7. https://neue.no/work/visit-nordkyn/, accessed April 2020.

Flags can be analysed in multiple ways—e.g. in terms of complexity, colour, similarity, among other criteria[9]. Regarding an analysis to a single flag, three aspects have a central role: (i) structure, i.e. how it is divided, what elements it includes, etc.; (ii) meaning associated with its elements; and (iii) what the flag symbolises, e.g. a national flag represents a nation. However, approaches to flag generation mostly focus on "structure" and give little attention to the other aspects. Our approach combines the three while giving special emphasis to the meaning of the flag elements, using it to change what the flag represents.

Our goal is to produce flags that represent a topic automatically retrieved from a news source and, in doing so, pose the following question: *Can flags also represent the mood of countries?* The concept of "mood" is based on the expression *I'm in the mood for [something]*. The strategy consists in having the flag of a country as the starting point and applying changes according to real-time data about the country. This reactivity to external input can instil a quality of "being alive" into the flag (Martins et al. 2019), which matches our goals.

Fig. 1. Example of the data collected for the Cyprus flag. The figure shows the ids assigned (e.g. *cy-island*), descriptions ("copper island") and meanings (M stands for general meaning, MC for meaning of colour and MS for meaning of shape).

3.1. Flag Dataset

The first issue to address had to do with obtaining the necessary data for flag generation. By searching existing projects on flags, we were able to find sources of three kinds of data: visual, e.g. a dataset of fully scalable vector graphics of flags (*flag-icon-css*[10]); semantic, e.g. the *Net.flag*[11] project (Napier 2002); and about flag structure, e.g. the platform *Flag Identifier*[12] (Sarajčić 2007). Data on flag structure is very useful for generating new flags from scratch. In contrast, when producing flags by transforming existing ones, the most useful types of data are semantic and visual. Since we could not find any dataset that associated both types of data, we decided to produce one.

As starting point, we used version 3.3.0 of the *flag-icon-css* SVG dataset, which contains 257 flags. However, image files of the original SVG dataset were not properly structured nor had they proper layer identification. For this reason, we produced a new version of the dataset, in which we organised the layers into groups according to flag structure and assigned the ids to the layers. For each element of a flag, we collected meanings on colour, shape, and overall meaning (see example in Fig. 1), from four main sources: the project *Net.flag*, the book *Complete Flags of the World* (Wills 2008), Wikipedia flag pages and "Meaning of [...] flag" posts on Reddit.[13] This process mostly involved reducing long descriptive sentences into keywords. To establish a

9. http://flagstories.co, accessed April 2020.

10. https://github.com/lipis/flag-icon-css/, accessed April 2020.

11. http://netflag.guggenheim.org, accessed April 2020.

12. http://www.flagid.org, accessed April 2020.

13. https://www.reddit.com/r/vexillology/comments/2yd77z/, accessed April 2020.

correspondence between visual and semantic data, we used the ids assigned to the layers of the SVG files. Due to its time-consuming character, the SVG structuring and meaning collection is still an on-going task. As of this moment, 117 SVG flag files have been structured—these can already be used as base flag in the generation. From these flags, 76 already have all their elements with meanings in the semantic dataset and 17 only have some.

3.2. Generating Flags

As mentioned earlier, there are several ways of producing flags. However, one of our main goals was to be able to maintain the resemblance with the base flag, allowing the identification of the country. For this reason, our system was grounded on two base assumptions: for each flag production, an existing flag would be given as input and the transformations should not go beyond the point in which the original flag is not recognisable anymore—i.e. the produced flags should not be seen as a totally new flag but as a transformation of the original one. This is also motivated by principles of good flag design—"Keep It Simple" (Kaye 2001)—aiming for small changes and reducing complexity. At a first stage, the process of producing flags involves the search for elements that match a queried word, which are then used to transform the original flag. The search is conducted in three different places: existing flags, a dataset of colour names and a dataset of emoji.

Existing flags. We mentioned earlier that structured SVGs could be used as a base flag. However, only flags with associated semantic information can be used to obtain elements to use in the transformation process. This is due to the fact that the search for the input word is conducted using the semantic information—the system searches for elements that have the word in their associated meanings. A random selection is then conducted to choose a replacement element and a replaced one. Then, the way the blend occurs depends on where the queried word is found: if it is in the overall meaning, the full replacement element is used; if it is in the shape meaning, only the shape is used and the colour of the replaced element is applied to it; if it is in the colour meaning, only the colour of the replacement object is applied to the replaced one. All in all, only 522 different words exist in all the collected meanings. This number is not very high when considering that any word can be queried. As a way to increase the chances of successfully finding the queried word, we added two other sources of information—emoji and a dataset of colour names.

Colour. Colour can be used to achieve different perceived meanings when generating symbols to represent a given concept (Cunha et al. 2015). Moreover, there are examples of colour being used to represent moods—e.g. in website Moodjam[14] the user keeps a record of daily moods using colours. To produce a colour name dataset, we extended the dataset *color-name-list*[15] by merging it with a list belonging to the ntc.js[15] library. From the resulting colours, we

14. https://moodjam.com, accessed April 2020.

15. https://github.com/meodai/color-names (dataset with 18,264 named colours), accessed April 2020.

extracted the ones that had names of only one word (e.g. *Tomato* colour), which resulted in a list of 3,476 colours. The queried word is searched in this list and, if found, the colour is applied to the replaced element.

Emoji. The project *Emojinating* (Cunha et al. 2019) uses semantic data of emoji to produce new ones through visual blending. By having this project as inspiration, we decided to add Emoji as a third source of semantic information for the queried word to be searched in. To do so, we use the dataset EmojiNet—a machine readable sense inventory with data on 2,389 emoji (Wijeratne et al. 2017)—in combination with emoji SVG images from the Twitter's Twemoji dataset.[16] When finding emoji that match the word, the system uses them as replacement as follows: if the flag already has a symbol, the symbol is replaced by the emoji; if not, the emoji is added on top of the flag, centred according to a randomly selected element and scaled to fit its bounding box. If the selected element is a triangle, the emoji is scaled a second time for aesthetic purposes.

16. github.com/twitter/twemoji, accessed April 2020.

3.3. "Ever-Changing" Flags

Any word can be used to produce a flag. However, our main interest involves producing flags that change according to current events. To achieve this, we follow an approach similar to the one used by Gonçalo Oliveira (2016), who produces memes using headlines automatically retrieved from the Google News RSS feed.

When generating a flag for a given country, the system automatically collects the latest news titles in English that mention the country's name. The second step consists in extracting nouns from the initial news titles by tagging the text using the Javascript Part-of-Speech tagger *jspos*[17]. Then, we analyse the nouns used in all the titles and identify the most predominant ones, excluding the country's name or its abbreviation. After sorting the nouns according to predominance (see topics sorted in Fig. 4), the system searches for data to be used in the blending process, as previously described. If no data is found for a noun, the system moves to the next one on the list. This search task is performed until the system finds information (and produces a flag) or until there are no nouns left (no flag is produced).

17. https://code.google.com/archive/p/jspos/, accessed April 2020.

3.4. Generating Explanations

In addition to generating flags based on a given meaning, our secondary goal was to do so in combination with producing an explanation for each flag. The explanation provides clues of how and why the flag was changed (see examples in Fig. 3). This creates a connection between shape, meaning and explanation, which, we believe, serves to provide a strong conceptual ground for the produced flag. In order to do this, we followed the structure observed in the *Net.flag* descriptions: [*element X*] *represents/stands for/symbolises* [*Y*], where *Y* is the queried word and *X* depends on the change nature.

For example, in the case of adding emoji, we defined that *X* would take the value of "symbol" (see left side of Fig. 2). In contrast, if there was a change of colour, the *element X* would be composed of the replaced element's name (e.g. "stripe") and the replacement's colour name (e.g. "red"). This posed an issue as, despite the colour name list being useful in finding appropriate colours, it would be confusing for the user to be presented with an explanation such as "The Airforce stripe represents...". In this case, the colour with the name "Airforce" should instead be mapped to the closest standard colour. To solve this issue, we used Daniel Flueck's extension[18] of the ntc.js library, which has a closest colour converter—the "Air force" colour is mapped to "Blue".

18. https://www.color-blindness.com/color-name-hue/, accessed April 2020.

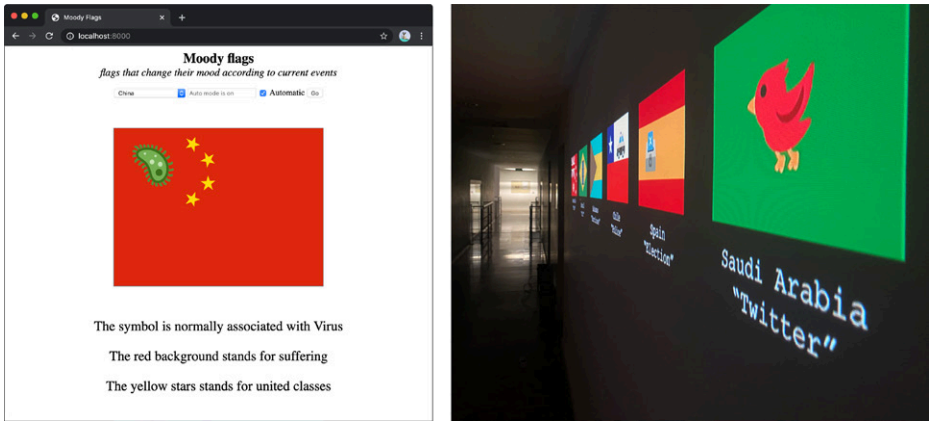

Fig. 2. Applications of the system. On the left, a web-based application showing a generated flag based on the China's flag and its explanation (produced on February 11th, 2020), in which the first sentence corresponds to the changed element (note: the sizes were intentionally changed to increase the legibility of the figure). On the right, the "Flags of Change" installation.

3.5. Applications

The developed system is only a starting point for several applications. Our main goal is to develop artefacts that foster a discussion on what a nation's identity can encompass and how the characteristics of current society can be exploited. At the moment, we have used the system in two different artefacts: a web-based application and a real-time installation.

Web-based App. We implemented an interface for the system to allow the user to produce flags according to their preferences (see left side of Fig. 2). It consists of two areas: (i) the *configuration area*—where the user defines the parameters for the flag generation—and (ii) the *flag canvas*—where the new flag is shown to the user. The configuration area has two parameters that always need to be provided by the user: the base country and mode of data retrieval. By default, the automatic mode is selected, and the system uses Google News RSS feed to obtain the trending topics to be used in flag production. If the user decides to disable the auto mode, the system asks for an extra input: a topic to be represented. This way, the user can not only see what the current flag is but also what it would be if a given topic was trending.

Installation. The installation "Flags of Change" presents the user with constantly updated flags from several countries, shown in a loop. The setup consists of a projection in a wall of a dark room with only visual stimuli—giving

spotlight to the flags. Each flag is accompanied by the country's name and the word retrieved from the news feed, which was used to produce the flag (see right side of Fig. 2).

4. User-Study: Results and Analysis

In order to assess the perception of generated flags, we conducted a user study. We produced a set of five flags (see Fig. 3): two resulted from colour replacement, two from symbol replacement with emoji, and one from emoji addition. These flags were automatically generated using the news at the moment of generation and selected by the authors. For each flag, the participant was asked to answer questions from two different sections. The participants were informed that they would be presented with flags computationally generated using real-time news. They were also asked not to search for any information while conducting the experiment nor change any answers.

In the first section of the survey, the only given information about the flag was the generation day and the users were asked to answer the following open-ended questions: Q1 "If you know which country is represented in the flag, please write the name", Q2 "There is a change in the flag. Describe what you think the change was" and Q3 "What do you think that the change represents?". In the second section, users were told which country was represented, what the change was and the topic on which the change was based (e.g. in the flag of Brazil the background colour was changed into dark grey using news about the oil spill). Then, the user waas asked Q4 "Is the flag a good representation of the news?" and required to give an answer from 1 (very bad) to 5 (very good).

Fig. 3. Flags used in user survey and produced explanations, automatically generated on 15/11/2019.

The survey was conducted with 16 participants, with age between 26–44 (average = 30.68 and standard deviation = 4.71). The results obtained can be seen in Table 1. For Q1, we considered correct answers the ones that referred the country of the base flag. Also, in flag #4 we considered answers such as "Argentina + Brasil" as correct due to the fact that the blended flag has both flags. On the other hand, in flag #3 we considered answers such as "United Kingdom" as wrong (despite the UK flag being included in the Australian flag) as the participant is clearly not familiar with the Australian flag. For Q3, we considered correct answers the ones that referred the word used to generate the flag. However, in the case of flag #5, we considered correct three answers from Q3 that did not mention "spy" as the participant had mentioned it in Q2—e.g. Q2 "change of the icon into a spy figure", Q3 "leak of information". In fact, one of the participants commented that they had

answered to Q2 that the change was the addition of a spy icon but on Q3 they had thought that "spy" would be too simple.

Table. 1. User study results for each of the generated flags.

#	Original	Word	Change	Right Answers (%)			Quality (1-5)	
				Q1 country	Q2 change	Q3 meaning	Q4 mode	Q4 median
1	*Brazil*	*Oil*	Background color	100.0	100.0	0.0	4	4
2	*Spain*	*Election*	Symbol replacement	100.0	100.0	68.8	5	5
3	*Australia*	*Fire*	Background colour	68.8	87.5	25.0	4	4
4	*Argentina*	*Brazil*	Symbol replacement	93.8	93.8	31.3	3	3
5	*Lithuania*	*Spy*	Emoji addition	25.0	43.8	31.3	5	4.5

When observing the results, one of the things that stand out is that for all the flags, except #5, the majority of the participants could identify the country and the change that occurred—indicating familiarity with the original flags. It is interesting to see that, in the case of flag #5 (Lithuania), despite the participants being unfamiliar with the flag, they could identify both the change and the meaning—which reflects the advantages of emoji in perception. On the other hand, in flag #1 no one could identify the meaning, despite everyone knowing the original flag (Brazil). When analysing the answers by the participants to Q3 of flag #1, 4 out of the 16 mentioned the burnt Amazon forest, which was a highly discussed topic at the time and a possible interpretation of changing the green to dark grey. Similarly, in flag #2, in which 11 out of 16 people got the answer right to Q3 ("elections"), 2 other people gave an answer related to political instability and another one gave an answer related to a referendum—both answers, despite not matching "elections", are aligned with the replacement of the symbol by a voting poll seen in the generated flag and with the situation of the country at the time. It is also worth mentioning that some of the participants that did not know the meaning of flag #3, which had a background colour change into red, submitted answers that could somehow be linked to that colour, for example "blood", "massacre" or "terrorist attempt".

Regarding quality, four out of the five flags obtained a quality of topic representation of good or very good by most participants. The results also seem to reflect the easiness of understanding emoji (see flags #2 and #5). However, flag #4 also uses emoji and had the lowest results. We cannot be certain, but we believe that this was due to how section 2 of the survey was designed for this flag. The user was presented with an explanation giving especial focus to football—"The symbol was changed using news about the football match between Argentina and Brazil"—but that meaning was not reflected on the blended flag.

5. Discussion

The efficiency of our system is highly dependent on the existence of semantic knowledge, which is used to find possible changes to be made. We believe that by adding three sources of semantic information (meanings of existing flags, emoji semantic data and colour names), we have increased the likelihood of success. However, it is impossible to guarantee the production of good results. For example, one case in which the system has few results is the word "state": in terms of data on existing flags, the only matches are star-shaped elements (e.g. the white stars in the United States flag); by considering emoji data, the system is able to find 255 different emoji, most of which are flags themselves; and using colour names, there is no match for "state". Two flags produced for Iceland are another example. The resulting flag changes depending on which data is available (see Fig. 4): if the system only uses data of existing flags, it is not able to produce any blend; if it uses emoji data, it is able to find information for the third trending topic ("Christmas" represented using a Christmas tree); and if it uses colour names data, it can only find information regarding the sixth trending topic "Namibia", which is the name of one of the colours in the dataset.

Fig. 4. Flags generated for Iceland using different semantic data sources (emoji and color).

From the conducted user-study (described in the previous section), it is clear that the meaning of the changes is not easy to guess and is very dependent on the user knowledge about the corresponding country and its current situation—only one of the flags had a correct response rate to Q3 (meaning) above 1/3. This leads us to conclude that the changes in the flag should have more impact within the corresponding country than internationally—as stated by Matusitz (2007) "vexillological symbols are displayed to the whole world, but are only understood by like-minded individuals", which is aligned with findings of difficulty in flag identification (Morales-Ramirez 2018). For this reason, further studies with citizens of each country are needed – none of the participants was a citizen of any of the countries with changed flags.

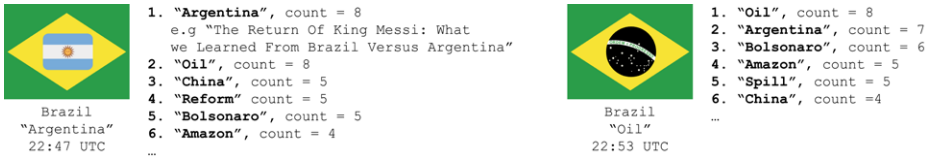

Fig. 5. Mood shift due to football match Brazil vs Argentina, on 15th November 2019.

One interesting aspect of the project is the ability to observe this "ever-changing" identity or, to use the term that we adopted, the changes in the "mood" of the country. An example of mood changing was observed on the 15th of November 2019, due to a football match between Brazil and

Argentina (see Fig. 5). During the hours before the match, the flag of Brazil was always retrieving "oil" as mood from the oil spill. Then, Messi scored and the mood changed, being translated into a different flag—for roughly 5 hours the mood stayed with "Argentina". Six hours later, it alternated between "Argentina" and "oil", and later on it went fully back to "oil".

Despite being different flags (oil-driven and Argentina-driven), it is possible to identify the resemblance with the original Brazilian flag. This aspect was of particular importance to us and the reason why, at this stage, we chose to only apply one change and avoid adding many elements, which would increase the complexity of the flag. Nonetheless, it would be interesting to see different trends affecting the flag at the same time, choosing the element to change according to its salience (i.e. impact on the overall aspect of the flag) to match the trendiness degree—the more trending the more salient the changed element should be. Even though the system only makes a change, some flags have few characteristic elements and end up losing their identifying resemblance to the original flag—an example is the flag of Saudi Arabia in which the symbol (an Arabic inscription and a sword) is replaced by a bird to symbolise Twitter (see Fig.2). Therefore, the applied changes, despite being simple, can go from subtle—unidentifiable for most people—to disruptive—possibly triggering a sense of discomfort on the viewer, who might see familiar elements but no longer relate the flag to their country, creating a gap on the notion of identity. This aspect gains even more importance if we consider that the citizens of a country may have different opinions regarding the national flag (Wright 2011; Satherley, Osborne, and Sibley 2019).

It is also possible to observe the effect of the same topic on different flags (see Fig. 6), for example "oil". As we have not yet implemented a system to deal with differences in salience, the visual change is similar, for example in the flags of Brazil and Norway, even though the seriousness of the news varies in degree—in the Brazilian one it should look more catastrophic due to the gravity of the situation. A similar effect occurs in the blend using the Pakistan flag, which is based on the topic "children" and results in a blend that applies a green colour to the symbols of the flag. Despite using the green colour, which is normally associated with good, the news behind the trending topic are far from positive (e.g. "An HIV Crisis Among Pakistan Children").

Moreover, some changes might make more sense when applied to certain elements. For example, Angola was also getting the "oil" trending topic and could have it applied to its cogwheel which is associated with industry. This would make perfect sense if we look at some of the news, e.g. "Angola oil production falls in October to 1,356 million barrels per day". Another example can be observed in two flags generated for Brazil using "Oil": in Fig. 3 the dark grey was applied to the green background; and in Fig. 4 it was applied to the blue circle. The latter version would be more suitable as the oil spill occurred in the (blue) sea whereas the former version can be

more easily mistaken for another topic—the Amazon fires. As such, a future development might involve taking into consideration the initial meaning or characteristics of the replaced element—"burnt" being applied in the green of Brazil flag or using Angola's cogwheel to represent industry-related topics.

Fig. 6. Examples of flags generated on November 15th 2019. Below each flag, the country of the original flag and the trending topic used in the generation are identified.

Incorrect behaviours of the system also occur. For example, when producing flags for Jordan it retrieves incorrectly matched news, getting news about Michael Jordan, instead of the country, leading to the trending topic "basketball" and resulting in the orange colour being used (see Fig. 6). Similarly, when using the topic "Trump", the system obtains a musical instrument emoji instead of something that represents the President of the United States. It is also important to mention how using elements from other flags might have a different effect than expected. Some of the elements and associations are culture-specific (Morales-Ramirez 2018; Becker et al. 2017) and might not have the same interpretation in all countries. Despite this, the results of the user study showed that, even if the user does not know the flag, it might be possible to infer some meaning. This can be exploited by using the flag to call the attention of the user to countries in which something relevant is happening. One example of this was identified in the study: none of the participants was able to link flag #1 (Brazil) to the huge oil spill that had occurred. As such, it could be possible to use the flags as a way of raising awareness, similar to what was done in the *Double Standards* project.

6. Conclusions and Future Work

The flag of a nation serves, among many things, to build and maintain the sense of national identity, representing the country, its people and its history. In this paper, we propose a different use for a flag—the representation of a country's mood at each moment. We present a system that produces variations of national flags through visual blending according to news titles retrieved from the Google News RSS feed, by using semantic information from different sources. In addition to producing a flag, the system also

presents the user with an explanation for the changed or added elements. In order to assess the perception of generated flags, we conducted a user study with 16 participants. The results show that the participants can identify the original flag, but they have certain difficulty in identifying the meaning of the changes applied to the flags. The potential impact of generated flags goes from raising awareness (to a certain event) to creating a sense of awkwardness by affecting the notion of identity.

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