IconoTag, empirical support for automatic multilingual picture indexing

James M Turner
École de bibliothéconomie et des sciences de l'information
Université de Montréal, Montréal, Québec, Canada

Claire Nigay
École de bibliothéconomie et des sciences de l'information
Université de Montréal, Montréal, Québec, Canada

Karine Lespinasse-Sabourault
Alliance Francaise of Shanghai, 上海法语培训中心,
Université Paris 8

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Abstract:

Users of information services seek pictures for various purposes, for example to illustrate an article about food, explain animals to children, or study vehicles for transportation. In previous work, we found that native speakers of English and French attach closely corresponding indexing terms to the same images. However, English and French have many similarities, including many words in common and a common alphabet. IconoTag was a project to discover whether the high rate of correspondence is also true for other languages, especially if the roots of the language are completely different, or if the language uses another alphabet or ideogrammes. We built a web-based application to collect data. Participants were asked to tag twelve pictures, chosen using criteria established in earlier projects, including simplicity or complexity of the image, the number of things that can be named, how easy or hard it is to identify the contents, and so on. Two of the images were abstract, included as a control. The site was put online in 2010, and social networking and personal contacts were used to recruit participants to tag the twelve pictures in one of ten languages: Arabic, Chinese, English, French, German, Greek, Portuguese, Russian, Spanish, and Swedish. The results show high rates of correspondence, supporting the notion that automatic multilingual indexing of pictures in a networked environment is entirely feasible, and that users from many communities could find useful images from databases indexed in any language, independently of the language they use for searching.

Introduction

A number of our research projects have studied the question of indexing for still and moving images. We showed that whether an image is still or moving, users attach essentially the same tags to the same image (e.g. Turner 1994, 1995). We further showed that native speakers of English or French attach corresponding indexing terms to the same images. They name the objects they see in the images, and the names they give translate directly to the equivalent in the other language (e.g. Turner et Roulier 1999, Turner and Mathieu 2007). Our studies showed a great deal of consistency in the rates of correspondence. This suggests that images can be indexed in either language, and the indexing in the other language can then be generated automatically. The high rate of consistency indicates that the automatically-generated indexing would be of the same quality as the original indexing. Other studies dealing with indexing still images in English and French were conducted by Ménard (2006, 2007).

We followed up our studies with further studies using web translators (e.g. Hudon, Turner et Devin 2001; Turner and Hudon 2002). The results from these studies led us to believe that with appropriate web-based tools, it will be possible to index still and moving images in a single language, then generate indexing in many other languages automatically. However, multilingual indexing is not necessarily a need of the core users of any given image database, so it is not likely that those who manage such databases will implement it. The need is more on the part of users who visit the database via the web.

Web users type keywords into a search engine, then the search engine finds pictures for them. Search engines could be programmed to filter the user's keywords through bilingual dictionaries covering a number of languages, then forward the query to databases indexed using those languages, gather the results, and return the images to the user. We believe such a system would work well, as soon as enough freely-accessible bilingual dictionaries are available and a search algorithm is constructed. A number of bilingual dictionaries and other bilingual or multilingual vocabulary management tools are already available on the web, as are a few experimental web sites attempting multilingual indexing for images.

In this project, our goal is to demonstrate empirically either that such activity would work well, or to discover that it would not. In a multilingual environment, the problem between English and French is that the languages are so similar, with many words in common and a common alphabet. What would happen where there is no recognisable correspondence between words in languages that use a variety of alphabets or characters?

We showed in an earlier study (Turner 1995) that for this type of image ("ordinary" images as opposed to documentary images or art images), users and professional indexers attach the same terms to the same images. Further discussion of issues surrounding documentary moving images can be found in Lespinasse-Sabourault (2006). Art images are much more complex, because of the various levels of interpretation useful in studying them, and historically they have not been indexed at the basic level where objects in the image are named (Markey 1986, 1988). It is interesting to note that more recently, naming objects in art images by attaching tags to them is occurring on the web and in museums (Kellogg Smith 2006, Steve 2011).

In this paper, we use the term "tags" interchangeably with "indexing terms" or "keywords". Tags or indexing terms can be composed of one or several words. The question of whether tags constitute good indexing or not is not discussed here. Other researchers study

this question (e.g. Furner 2007, Kipp 2009), and as we have found in our own studies, part of the answer depends on the type of material being tagged or indexed. Here we concentrate on still images that can we mostly consider to be "ordinary" images, but the categorisation is somewhat arbitrary, since the same pictures can also be considered as documentary images or even art images, depending on the context.

Method

In order to study the question of whether tags given in one language can be translated automatically into useful tags in other languages, we collected data using a web site called IconoTag, which we built in French. Then, using the social networking site Facebook, we recruited help in building ten identical, parallel language versions of the site. The languages are Arabic, Chinese, English, French, German, Greek, Portuguese, Russian, Spanish, and Swedish. The site was housed on a server offering a back-end SQL database for housing the data gathered using web-based PHP forms. The home page offered links toward the ten languages. The first click (choosing a language) led to miniatures of the 12 images to be tagged (figure 1), as well as to a brief explanation of the research project and instructions for

Figure 1. The twelve images participants tagged in one of ten languages.

participants. A click to the next screen offered further explanation of the project, information on how to contact the researchers if desired, information on the university's ethics requirements, and a click signifying consent to participate in the project.

Once the participants clicked on the consent button, they were led to the first image, much larger now, and on the same screen was the form for entering tags for the image. Once they

finished tagging the image, clicking on a "Submit" button brought them to a page with the next image and a new form, and so on until all twelve images were tagged. This data they entered was recorded in the backend database, and was then ready for export and analysis.

To encourage participation, we created a task that was easy and that could be performed in a few minutes. The twelve images we used were selected on the basis of a number of criteria established in earlier projects, including simplicity or complexity of the image, the number of things that can be named, and how easy or hard it is to identify the contents. We included two abstract images (numbers 3 and 6) as a kind of control, expecting that even if we achieved high correspondence rates in the tags given for the easily-identifiable images, the most popular terms would probably be completely dispersed for these two images. Image 3 presents a detail of a stabile (as opposed to a mobile) sculpture by Alexander Calder, entitled "L'Homme" ("*Man*") and installed on the site of the Expo67 world's fair in Montréal. Image 6 records the loci of light created by moving a digital camera while taking a picture at night. We chose only landscape-oriented images to reduce the risk of the orientation becoming a variable that might cause differences in the responses. We chose landscape over portrait orientation, because computer screens have this orientation. In this way, the images could be as large as possible.

On the basis of previous results (Turner 1994), we decided to collect no personal information in order to further simplify the task and to shorten the time required to complete it. Previous studies showed no significant differences in the indexing provided by ordinary users, whether they were young or old, female or male, experienced in working with images or not, students or workers, and so on.

The site was put online in March 2010, and left for several months, until we felt we had enough data to analyse. Social networking and personal contact were used to recruit participants. They were to choose a language, then tag the twelve pictures. The instructions told them to stop tagging once they thought each picture was described adequately, up to a maximum of five tags per picture.

Results and analysis

We reported partial results of this project in two previous papers (Turner and Nigay 2010; Turner, Lespinasse-Sabourault and Nigay 2010). Here we give the complete and final results. Since we already had rather large numbers of participants for English, French and Chinese, we concluded that the top terms already identified remain stable, and so did no further analysis on this data. Table 1 shows the number of participants whose data we analysed for each language.

Table 1. Number of participants for each language

Language	Number of participants
French	323
English	127
Chinese	90
Swedish	26
German	17
Spanish	14
Portuguese	7
Arabic	2
Greek	2
Russian	2
TOTAL	608

Tables 2, 3, and 4 show the top three terms given in each of the languages. Where two or more terms achieve the same score, all the competing terms are given, in alphabetical order. Asterisks indicate one or more missing letters, in order to include plurals, variant spellings, and longer words composed of several words.

The data is broken into three tables because of the difficulties in analysis and representation. Clearly, we have not yet achieved globalisation of computer software! Since the authors do not speak or read Chinese, help was sought in analysing the data in this language from library staff in China. For Arabic, there were in fact a total of 30 respondents, but a technical problem with the data collection mechanism caused the data from 28 of these participants to become unusable before we discovered the problem and were able to fix it, leaving us with data for only two respondents. This is especially unfortunate since Arabic uses a non-roman alphabet and thus more data in this language would have been valuable in meeting the goals of the project. The data for these two languages are given in separate tables.

Table 2 gives the data for the eight remaining languages in which we collected data. We were able to recruit only two participants for both Russian and Greek, so the data is rather sparse, but included here anyway, on the grounds that it is better than no data at all.

[table 2, outsize, appears at the end as Appendix A]

As is usual in analysis of this type of data, the responses follow Zipf's distribution, that is, when the responses are compiled into a spreadsheet, most cells in the matrix are empty, most tags are given a single time, and a few tags are given many times. The ones given many times are the ones we wish to study, because they are the most useful indexing terms.

First we compare the top three terms, the ones given the most often. It is useful to consider the three terms independently of their ranking, because although there are variations from language to language as to the ranking, we notice that for most images, all languages or almost all languages have the same top three terms, or two of the top three terms. At the search end, this means that a user who gave any of these terms would find the image. However, with this data set, the correspondence is in fact even more precise, because for images 2, 4, 5, 6, 7, 8, 9, 10, 11, 12 (10 of the12 images or 83% of the images), all or almost all languages have the same term in the first position. This is surprising, because only four of these images were simple, the main object in the photo being obvious. Since participants also found other things to name, the ranking of the top term offers valuable information about how images are perceived and interpreted from both the physiological and the cultural perspectives.

Next we look at the data based on the type of image. Because there were simple, complex, and abstract images, analysis based on these criteria is particularly interesting. The simple images (a single significant object to name) are numbers 2, 7, 10, and 12. The complex images (several objects to name, objects competing for attention, or objects more difficult to identify or name) are numbers 1, 4, 5, 8, 9, and 11. The abstract images, included as a control, are numbers 3 and 6. We expected that the correspondence among languages would be high for the simple images, more dispersed or completely dispersed for the complex images, and that there would be little or no correspondence for the abstract images.

The actual results are very encouraging, since the rates of correspondence are higher than expected, sometimes even surprisingly high. As one might expect, participants from all languages for which there is data for the image gave the same top term for the simple images. There is a single exception to this: for image 2, Arabic-speaking participants gave the

equivalent of “bird” instead of “peacock” as the top term, with peacock as the second term. However, the exception is very weak, since we had usable data from only two participants. Since participants could name up to five terms for each image, “bird” arrived in first position (4 occurrences) as an element of the terms the two participants gave.

We did not expect the complex images to have such high rates of correspondence. Here we look more closely at the rankings. For image 1, there is no strong term in first position, but the top three terms taken together cover the same concepts (garbage, street, cleaning). For image 4, “camera” is first in 7 languages, and “photo” in 3 (French, Portuguese, Chinese). For image 5, “beach” is first in 9 languages, and “sea” in 1 (Russian). Here again, a weak exception because there is data from only two participants. For image 8, all languages have the same concept (dance) in first position. For image 9, “cactus” is first in 9 languages, and “desert” in 1 (Spanish). “Cactus” was almost tied (one fewer occurrence) for first position in Spanish. Data from more participants would probably make the positions of these terms more precise. For image 11, “food” is first in 8 languages, “dish” in 1 (French), and “cooking” in 1 (Chinese). Since we had a considerable amount of data for French and Chinese, these results possibly reflect interesting cultural differences in perception.

The results for the abstract images, put in as a control, were the most surprising. Now we wonder whether we were naïve in expecting broad dispersion of the terms. However, the fact that the participants tried to name what they saw, and that they saw the same things and gave them the same names, generally speaking, is very encouraging as an argument supporting the notion that tagging is useful as indexing for images. For image 3, the top terms cover the same concepts (structure, steel, metal, building, sculpture). For image 6, “light” is in first position in all languages except for Arabic, in which “fireworks” is the only term given by the two participants. Other terms this image elicited were “colour” and “photo”.

Next we discuss analysis of the data from Chinese-speaking participants. This was carried out in a separate activity. There were technical difficulties in interpreting the Chinese-language tags from the database used for data collection, so that the analysis could not be done with the rest. In addition, none of the project’s team members can read Chinese characters. However, we were able to recruit the help of Chinese-French bilingual staff from the library of the Alliance Française of Shanghai (上海法语培训中心图书馆), whose work on cross-cultural issues has been described in Josso and Lespinasse-Sabourault (2008). This work showed that analysis using French as an intermediate language worked out well for a gross comparison.

Because of the differing writing systems (Zhang et al. 2006), it was not possible to use the same method of word truncation or letter substitution for analysis of the Chinese-language data. Table 3 presents an analysis comparing the data for each image with terms in French and English. The Chinese-speaking assistants made a French-language version of the concepts expressed in Chinese. Next, we counted the occurrences of terms using the French-language versions of the Chinese terms, using the same method of truncation we had used for analysing the terms in the western languages. Since both the French-language words and the Chinese characters represent concepts, the method, while somewhat awkward, gives a reasonable portrait of the correspondences.

Table 3. The most popular tags from Chinese-speaking participants, using French as an intermediate language, and the most popular tags given by French and English speakers.

Image	Chinese (90 participants) term	French from Chinese term, frequency		English from Chinese terms via Google term	French (323 participants) term, frequency		English (127 participants) term, frequency	
01	垃圾	ordures	46	garbage	éboueur	188	garbage	101
	清扫	nettoy*	42	cleaning	poubelle	137	clean	77
	街道	rue	44	street	camion	115	street	90
	清洁工	éboueur	29	cleaners	nettoy*	109	truck	47
02	孔雀	paon	69	peacock	paon	288	peacock	127
	动物	animal	12	animal	oiseau	159	bird	70
	蓝色	bleu	9	blue	plume	56	blue	33
	草地	gazon	7	lawn	bleu	55	feather	26
03	钢结构	acier	19	steel	métal	150	structure	44
	建筑	bâtiment	14	building	architectur*	80	steel	36
	飞机	avion	14	aircraft	sculpture	43	metal	35
	天空	ciel	11	sky	acier	42	architecture	28
04	摄影	photo*	74	photography	photo	344	camera	116
	光	lumière	71	light	appareil	213	tripod	89
	照相机	appareil-photo*	45	camera	ombre	127	shadow	54
	影子	ombre	26	shadow	trépied	115	photo	50
	三角架	trépied	30	tripod				
05	海滩	plage	64	beach	plage	216	beach	105
	度假	vacances	23	holiday	mer	179	palm	45
	游乐	loisir	13	recreation	palmier	133	ocean	31
	阴天	ciel gris	12	cloudy day	bord de mer	55	arcade	30
					vacances	55		
06	光	lumière	42	light	lumière	184	light	83
	摄	photo*	15	photo	effet	61	photo	21
	光影	éclairage	13	lighting	nuit	45	colo*r	18
	色彩	couleur*	11	colour	abstra*	36	night	15
07	奶牛	vache	62	dairy cow	vache	281	cow	123
	牛奶	lait	11	milk	pré	100	farm	23
	草原	prairie	11	grassland	lait	44	field	23
	牧场	pâturage	7	ranch	campagne	43	Holstein	23
					animal	33	black	22
							white	22
							animal	17
08	舞蹈	danse	56	dance	danse	308	dance	117
	异域风情	exotique	12	exotic	costume	120	costume	44
	印度	Indien*	7	India*	tradition	63	wom*n	18
	泰国	Thaïlande	7	Thailand	Bali	47	Asia*	15
09	仙人掌	cactus	49	cactus	cactus	267	cact*	117
	沙漠	d*sert	21	desert	desert	216	desert	89
	干旱	sec*	8	arid	ciel	49	sky	20
					arid*	46	blue	13
10	南瓜	citrouille	52	pumpkin	citrouille	217	pumpkin	109
	万圣节	Halloween	14	Halloween	Halloween	102	harvest	36
	菜市场	marché	14	vegetable market	orange	85	Hallowe*en	29
	丰收	moisson	8	bumper harvest	potiron	79	orange	28
11	烹饪	cuisine	26	cooking	plat	123	food	59
	佳肴	plat délicieux	18	cuisine	repas	98	vege*	45
	食物	aliment	11	food	assiette	90	meal	33
	餐	repas	7	meal	légume	86	dinner	27
12	花	fleur	49	flower	fleur	260	flower	100
	紫色	violet	15	purple	pivoine	80	pink	49

牡丹	pivoine	10	peony	rose	75	peon*	37
极美的	magnifique	8	very beautiful	feuille	52	purple	19

From this analysis, we identified the Chinese characters corresponding to the 4 most popular terms, then pasted them into Google Translate to get an English-language version. Thus we can see in table 3 the relationships among the terms in these three languages, with the count corresponding to the French-language version of the Chinese terms. The last two columns give the data from the French- and English-language participants, as an aid to comparison. Since we analysed the top four terms in Chinese instead of the just the top three elsewhere, we have left this richer data in table 3.

The two Arabic-speaking participants whose data we were able to analyse gave a single term for most images. For three of the images, they gave two terms, and for three other images they gave none. Table 4 shows the terms they gave.

Table 4. Tags from the two Arabic-speaking participants whose data was usable.

Image	Top term	Freq	Second Term	Freq
1	تنظيـــف	2	قمامة	2
2	لطيــور	4	لطـاووس	2
3	*no data*			
4	صـور	3	كــاميرا	2
5	شـاطئ	2		
6	ناريــة ألعـاب	2		
7	بقــرة	3		
8	رقصــة	2		
9	صـــبار	2		
10	*no data*			
11	غذاء	2		
12	*no data*			

Arabic is another language no member of the research team speaks or reads, but running the character strings through Google Translate allowed us to verify the equivalents in languages we know well, English and French. Because of this cross-check, we are confident that our analysis is accurate.

However, the sparse data from participants from languages with an alphabet other than the Roman alphabet is truly regrettable. Except for Chinese, for which data from 90 participants was analysed, the other languages (Arabic, Greek, and Russian) are poorly represented in our data. Our efforts to recruit participants who speak these languages were clearly not fruitful.

Still, the data we did get gives a useful glimpse into what the results might be like, since the few participants available named the same top terms as those from other languages. These terms (representing the names of objects in the images) clearly seem to be the ones that come to mind when participants see the images.

Discussion

The difficulties experienced with collecting data are partly due to the limited means available for conducting the study. We were largely dependent on volunteers who made the various language versions of the sites for us, others who tried to recruit participants from various language communities, and the good will of those who agreed to participate. Still, over the years we have worked on this problem, we have accumulated enough experience and seen enough patterns in data of this type to be confident that our results are accurate. We tried to get empirical data to provide theoretical support for the soundness of automated cross-language indexing for "ordinary" pictures.

Ultimately, it is a kind of indexing that will happen with time anyway, independently of our work. In addition, it will happen only by automated means, since the costs of doing it otherwise are prohibitive. The task involved in tagging images is that of naming significant objects that are visible. We showed in previous studies that almost anyone can name objects in images of this type as well as professional indexers can, and that a few terms emerge as those that are named by most people. Once the terms are established in any language, the quality of the indexing in other languages is dependent on the quality of the translating tools.

Although the very small number of participants who provided usable data in languages using alphabets other than the roman alphabet is disappointing, what little data we did get is still significant, and it is now reasonable to assume that had we gotten more data, it would have followed the same patterns as with the other languages. The data from our Chinese participants is particularly useful in this context, because we did get data from a large number of participants in this language. Since the Chinese data shows no deviation at all from the patterns in the data from the western languages, it is probably safe to assume that we are looking at a universal phenomenon that will hold true for virtually any language.

This work will contribute to validating other approaches. One such approach involves propagating indexing terms and other metadata from one image to a similar image, i.e. to a picture of the same object. To do this, high-level techniques such as words attached to pictures by humans can be combined with low-level object-recognition techniques such as those used by the Photosynth technology (Aguera y Arcas 2007). With this technology, by mapping numerous photographs of details onto a general model, multiple photographs find their place in the appropriate area of the model. From this, if one user adds tags to identify a photograph of a particular detail, other photos of the same detail can inherit the metadata. Adopting the approach using bilingual and multilingual dictionaries we have described here, there is no reason why the photograph a user tags and the other photographs that inherit the tag by propagation could not also inherit the tag automatically generated in multiple other languages, thus making the image available to a far broader community of users.

Our work with shot-by-shot indexing of moving images shows that the same patterns apply, further broadening the field that can be studied. There are undoubtedly many, many other applications in which this knowledge can be used, so that there will be no shortage of topics for researchers, especially those who know ten or twelve languages (!), to study.

Conclusion

We set out to get empirical evidence to support the idea that online bilingual dictionaries and comprehensive tools such as Google Translator can generate tags in other languages that allow users to find images, independently of the language they use for searching. In other words, that the likely names for an object that participants in a study from a variety of language groups will give are the same as the names such web tools will generate automatically when the term is entered in a single language. Although they are imperfect, these web tools are widely used, and automatic translation of indexing terms for "ordinary" images results in accurate, good quality indexing for "ordinary" images, as long as the original indexing terms are accurate. As a measure of the rate of technological progress taking place now, it is interesting to note that such an approach could hardly have been imagined as recently as the beginning of this century. Clearly, ongoing development of web tools will continue to offer researchers fertile ground in which to study automatic multilingual picture indexing.

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Appendix A: Table 2. The top three terms, for eight languages, and the number of times each term was named (frequency).

	English (127 participants)		German (17 participants)		Swedish (26 participants)		French (323 répondants)		Spanish (14 participants)		Portuguese (7 participants)		Russian (2 participants)		Greek (2 participants)	
Image	**term, frequency**		**term, frequency**		**term, frequency**		**term, frequency**		**term, frequency**		**term, frequency**		**term, frequency**		**term, frequency**	
01	garbage	101	Müll*	20	gat*	19	éboueur	188	basur*	19	limpeza	7	мусоровоз	2	Σκουπιδιάρικο	3
	clean	77	Straß*	15	renhållning	8	poubelle	137	limpi*	6	rua	7				
	street	90	Stadt*	6	sop*	8	camion	115	calle	5	lixo	5				
									camión	5						
02	peacock	127	Pfau*	20	påfågel	22	paon	288	pavo real	10	pavão	8	павлин	2	*no data*	
	bird	70	Vogel	5	fågel	13	oiseau	159	ave	5	ave	2	птица	2		
	blue	33	Zoo	3			plume	56	azul	3	beleza	2				
	feather	26	Tier	3			bleu	55			cores	2				
											penas	2				
03	structure	44	Stahl*	11	konstruktion	10	métal	150	estructura	6	estrutura*	3	*no data*		*no data*	
	steel	36	*Konstruktion	8	byggnad	6	architectur*	80	architectura	4	metal	2				
	metal	35	Träger	6	metall	5	sculpture	43	cielo	4	ponte	2				
									metal	4						
04	camera	116	*Kamera	12	kamera	28	photo	344	camara	10	foto*	10	фотоаппарат	4	Κάμερα	2
	tripod	89	Foto*	10	stativ	18	appareil	213	foto	7	máquina	4				
	shadow	54	Stativ	7	skugg	9	trépied	115	sombra	4	tripé	3				
									tripode	4						
05	beach	105	Strand*	13	strand	22	plage	216	playa	9	praia	8	море	2	Παραλια	2
	palm	45	*Wolk	6	palme	12	mer	179	palmera*	4	mar	4				
	ocean	31	Palmen	4	hav	9	palmier	133	mar	3	palm	3				
	arcade	30	Meer	4					vacaciones	3						
06	light	83	Lichter*	8	ljus*	15	lumière	184	luc*	7	luz	4	*no data*		*no data*	
	photo	21	Nacht*	6	neon	9	effet	61	colores	3	arte	2				
	colo*r	18	Feuer*	4	foto*	6	nuit	45	foto	3	festa	2				
									neon	3	fogo de artifício	2				
07	cow	123	Kuh*	11	ko	19	vache	281	vaca	12	vaca	6	*no data*		*no data*	
	farm	23	Land*	4	kviga	6	pré	100	animal	5	pasto	3				
	field	23	Weide*	3	svart*	6	lait	44	pasto	3	leite*	2				
	Holstein	23							prado	3	prado	2				
	black	22														
	white	22														
08	dance	117	Tanz*	16	dans*	21	danse	308	bail*	12	dança	9	Танец*	5	*no data*	
	costume	44	Asiatisch	5	dräkt	6	costume	120	danza*	6	bailarinas	2	экзот	2		
	wom*n	18	Frauen	2	Asiatisk	4	tradition	63	cultura	3						
									mujer*	3						
									tradicional	3						
09	cact*	117	Kakt*	13	kaktus	19	cactus	267	desierto	9	cact*	7	Кактус	2	*no data*	
	desert	89	Wüste*	8	öken	12	desert	216	cactus	8	deserto	3				
	sky	20	Landschaft	2	landskap	8	ciel	49	azul	2						
			Himmel	2					cielo	2						
10	pumpkin	109	Kürbis*	13	pump*	29	citrouille	217	calabaza	10	abóbora	10	Тыква	2	*no data*	
	harvest	36	Herbst	7	orange	7	Halloween	102	naranja	5	feira	2				
	Hallowe*en	29	Halloween	5	grönsak	4	orange	85	Halloween	3						
					Halloween	4										
					höst	4										

11	food	59	Essen	9	mat*	32	plat	123	comida	9	comida	6	еда	2	*no data*		
	vege*	45	Restaurant	5	halloumi	9	repas	98	pescado	3	prato	5					
	meal	33	Gemüs	3	måltig	6	assiette	90	restaurante	3							
			Gericht*	3					verduras	3							
			Grill	3													
			Fisch	3													
12	flower	100	Pfingstrose	6	blomma	19	fleur	260	flor	9	flor	7	*no data*		Άνθος	2	
	pink	49	Blume	6	Pion	12	pivoine	80	naturaleza	3	cor de rosa	5					
	peon*	37	Blüte	3			rose	75	verde	3							
			Lila	3													