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The affective perspective of early maps

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Summary

Affective Cartography is currently being explored by cartographers. Different artistic outcomes are demonstrating how contemporary, new media art and design projects can be used for investigating the relationship between people and space in order to discover new realities, perceptions and emotions that possibly could remain unknown under the objectivity of the conventional map representations. However, this paradigm is not exclusive of this discipline. This paper reveals the starting point for exploring, from a conceptual and technical point of view, how the concept of affective cartography could be linked to the iconography represented in early maps, with a high component of subjectivity itself.

Introduction

Psycho-geography was defined by Debord (1955) trying to understand the effects and the way the geographic environment shapes our emotions and our behaviour. It seems logical to draw maps describing places impregnated with subjectivity, starting from a view that may be personal, historical, social, political or media-related or even, why not, from visions that may be romantic, dream-related or hedonistic. Many artists have worked on this desire and their work, free from general or universal considerations, invites us to experiment and reflect on our immediate environment, to look at it and explore it. Thus, Affective Cartography is currently being studied and explored by cartographers linked to new media art and design projects, investigating the relationship between people and space in order to discover new realities, perceptions and emotions that could possibly remain unknown under the objectivity of the conventional map representations.

This paper is a starting point for exploring, from a conceptual and technical point of view, how the modern concept of affective cartography could be linked to those early maps with a high component of subjectivity itself, by the iconography represented by cartographers.

Affective Cartography

The personal need or the desire to mix geographic information with subjective information seems to come forth as a matter of fact. Wishing to leave on a map the hallmark of a trip, of visited places, is natural. Per-

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sonal annotations may be useful and valuable for the cartographer and for others later. Hence this new cartography in which the depicted information has a personal trait whose quality of being subjective gives rise to the so-called Affective Cartography by Cartwright et al. (2008).

There are many instances of this type of cartography in different artistic fields, painting, performance and other creations made by artists interested in space perception. There are also examples closer to cartography itself such as the Atlas of Emotion (Bruno, 2002), matching cinema, architecture and the arts as a landscape to be described. Finally there are more recent contributions within the cartographic field in the proper sense, such as the Atlas of Literature (Piatti, 2008) or the Atlas of Cinema (Caquard, 2008).

In these cases maps with that assortment of information were made traditionally by a single author or by a single producer, without the possibilities the communication technologies nowadays offer for cooperation and participation by many in a single project. These technologies are just the foundation supporting the emergence of this type of cartography.

Early Maps from an Affective Point of View

Goodchild (2007) points out people participation in capturing geographic information – which he names Volunteered Geographic Information – also underlining the importance of subjective aspects, as he states in his article Next-Generation Digital Earth: "the potential of up to 6 billion human sensors to monitor the state of the environment, validate global models with local knowledge, and provide information that only humans can capture (e.g. emotions, and perceptions like fear of crime) is vast and has yet to be fully exploited".

Thus we associate Goodchild's construct of human sensors with the view of cartographers and cosmographers producing the early maps. Did they not also somehow communicate their personal perceptions of the visited or related spaces? By considering the definition of affective cartography, one wonders whether there are ideas in these early maps that may be included in the definition.

As of today, these old cartographers are usually linked to specific locations they knew from exploration travels or stories, and towards which they had developed feelings or emotions, both positive and negative. It seems that those people already had the chance to talk about those places employing maps, and to supply information on places they knew well.

We should then ask the question, can we comprehend the early maps as affective cartography? May we make an interpretation of the cartographers' emotions around their drawings?

As a first approach we have taken the example of the 1562 map of America by Diego Gutiérrez, Spanish cartographer of the 'Casa de la Contratación' (House of Trade) and Hieronymus Cock ['sobresaliente' (substitute) engraver in Antwerp]. Both of them participated in the production of this map entitled "*Americae sive quartae orbis partis nova et exactissima descriptio*" (Gutiérrez & Cock 1562). It is the largest engraving of America up to that time; it stands out by the spectacular quality of its drawing. The map depicts America and part of the western coast of the European and African continents. In spite of its scale, it was not intended for nautical use or to be scientifically accurate. Despite its large scale, it is a diplomatic map as is made evident by the coats of arms. With this map Spain proclaimed its American territories to the European nations (Hébert 2001).

Natural elements

When analyzing its natural elements, we find that the map recognizes the presence of the Amazon River, the Paraná and the other rivers of South America; islands, often nameless, are also shown (Figure 1). Lakes such as the Titicaca are also "objectively" represented as well as others without a label.

In a map as embellished as this, it is curious to observe that there are no illustrations in continental areas helping the expression of the exotic land, while a profusion of marine elements is present for the enjoyment of the authors (Figure 2).

Figure 1. Drawing of the Amazon River.

Lack of room in the map might have been the cause, but the authors could have freed space in the continental land since it would have been enough to place the texts on the sea. Are we not dealing with a question concerning the affective component of these maps? The sea as an unknown, hostile element of which many legends are to be told and represented, against a more or less safe perception of the continental lands.

Figure 2. Lack of illustrations explaining the exotic nature of the landscape.

Settlements

Another aspect worth our attention is the display of human settlements, represented quite indistinctly in the map. There are outstanding omissions in Portugal and Spain where only coastal towns or those somehow related to the sea, such as Seville, are indicated. This seems to be first evidence that the map is not intended to be a faithful representation of the known world; the authors do not even try to make it appear such. Attention is only paid to the New World and whatever happens there. As a matter of fact, Mexico City, indicated in the map as the capital of New Spain, is the only town pictorially represented. Although the drawing is simple, a fortress can be seen surrounded by a dark spot seemingly showing the extraordinary dimension of this city.

It is interesting to note that in the other cases a simple circle is drawn and cities such as Madrid, capital since 1560 (but not Lisbon), are omitted. The names of the cities have similar size in the representation of the New World (Figure 3). The city represented the basic cultural unit and the medieval Portolan charts already gave relevance to the cities, their rulers and their markets. Then, how can be explained the fact that an embellished map curtails more detailed drawing of aspects related to human settlements? Could it be explained from an affective viewpoint? Is the greatness of the Spanish capital in Mexico emphasized against all other cities? Have the old capitals already become unimportant?

In fact, the city, paradigm of civilized man, is not shown on the map with the expected degree of detail; however great care and detail is given to the representation of *non-humans*, giants, savages and cannibals.

Figure 3. Contrary to the representation of America (left), in the Peninsula only the seaside towns are indicated. Not even the capital of the kingdom is present in the map (centre). Only Mexico City (right) is worth representing as a major urban centre in this map.

Beings and Fantastic Legends Inland

In the region of Brazil savages appear dismembering human beings. They let their extremities dry up; they bake those using big cauldrons. The detail of the representation of these legends indicates that they are intended to be purposefully explained indeed and perpetuated. The excessive size of the drawing scale also makes it evident; these scenes occupy the same surface as that of Spain and Portugal together. Is this information communicated with the end of reporting assumed realities? Or else is it a way of justifying colonialism, of legitimizing the claim to assumed properties? (Vizuete, 1997). This could be a plausible explanation but were there other reasons from the affective perspective? Is it possible that a moved Gutiérrez assumed this information to be true and so he wanted to provide so much detail and room to relate the existence, rituals and habits of these savages? The cannibals appear naked, dishevelled, always in a hostile stance, cutting up human extremities with a coarse machete or put on a spit and roasted on the fire, always under the attentive sight of a sorcerer from above. These drawings may be compared to the ones representing the giants in Patagonia to make reference to this legend (Figure 4). Similar questions may be asked although there are remarkable differences between these representations. In this case the presence of the giants is labeled (Gigantum Regio) as if dealing with objective data, a city or a settlement. For the cannibals there is no label on the map, even though, as in other maps, the label "canibali" would have been expected.

Figure 4. Cannibal scenes in Brazil (left) and giants in Patagonia (right).

The object identification by its name has an affective dimension, in this case underlined by the representation of giants, appearing less fearful than the cannibals. This map approaches the image of the giant as a primitive being, not fearful but kind. The giants are identified and presented as clean, half-naked, upright and well built beings, along the lines of Greek sculptures. Two of them appear chatting with a man of normal height which stresses their human dimension. They are hunters, same as primitive men, but they carry sophisticated bows, as opposed to the rudimentary tools used by cannibals.

What reasons can be adduced to offer such a lenient image of the giants of Patagonia? Why do cannibals intimidate more than giants – to whom identification is given? Could the giants have been used as a colonialist legitimizing discourse? Why do giants not represent a threat for humans if they are dominant and stronger? Does it have to do with the region where they are located? After all the Brazilian lands could be more inviting than the vast barrenness of Patagonia. Finally, could we be dealing with reasons of a subjective nature related to Gutiérrez's perception of this space?

Land Description

There are many maps of this time illustrating unknown landscapes through drawings of native plants and animals (Piri Reis, or Sebastião Lopes two years earlier). In this map there is hardly any illustration and curiously enough drawings appear only as a filling of free room in the African continent: an elephant, a rhinoceros and a starving lion (Figure 5). Could there be an underlying reason for the lack of other animals or descriptions of oases or palm trees inland? Why no interest is paid to them? Is an image of homogeneity inland, the lack of danger or differences desired? Only "marked" as different appear Africa by its fauna and South America by its legends. Europe and Central America seem to have the same make-up.
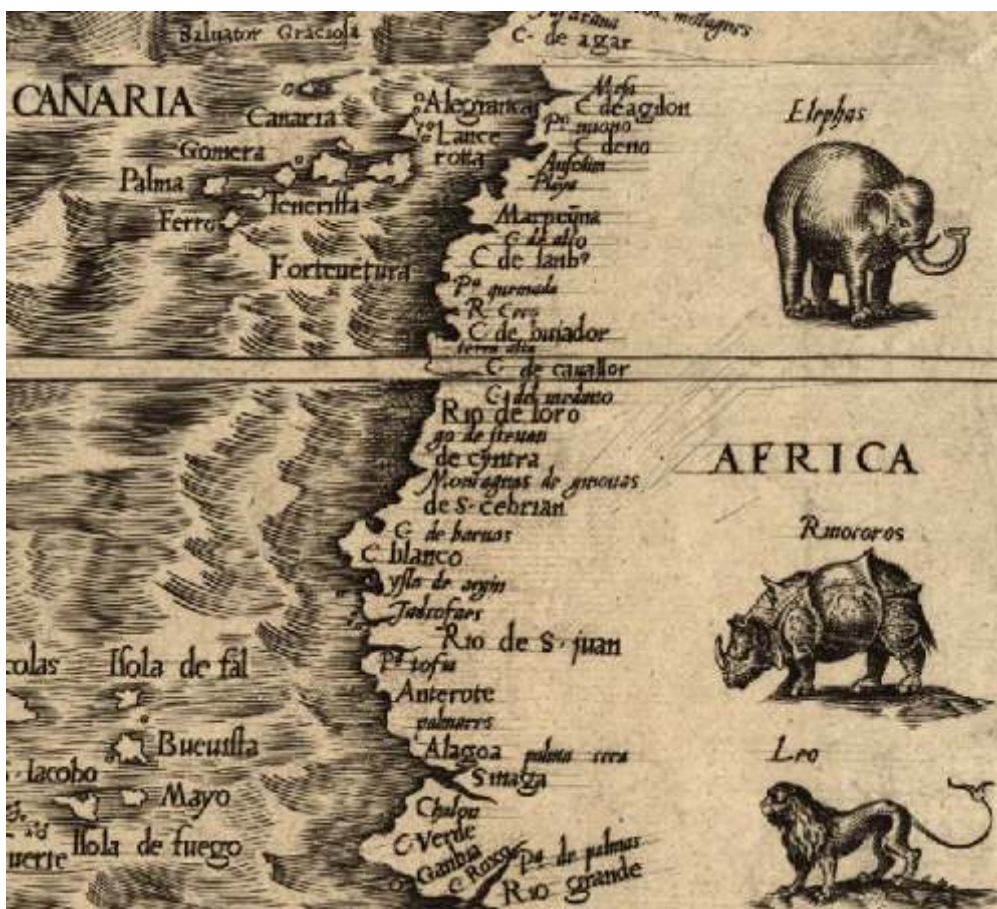

Figure 5. Free room allows representation of African fauna.

The drawing of an erupted volcano in Central Mexico is noteworthy by its uniqueness (Figure 6). It is interesting to observe that the volcano is located to the south of the sole capital indicated on the map which is also just the only city whose representation has been drawn. It would seem that some kind of affectivity is implied in this conquered region which is indicated, expressed and explicitly described.

Figure 6. Erupted volcano in Mexico.

Vessels and Fantastic Marine Beings

When looking at the beings drawn on the map, it would appear that the sea was more populated than the firm ground. Vessels together with part of the artistic construct created by man around legendary marine creatures coexist.

"La Flota de Portugal Que Va Par Calicute" is the legend seen near the Portuguese fleet on the Atlantic Ocean surrounding Africa toward the Bengal Gulf (Figure 7). Is this a way of reflecting on Portuguese interests in India or could this have been a subliminal form of consolidating the take-over of America, by pointing out that the Portuguese are interested in other lands?

Figure 7. Portuguese vessels toward Calcutta.

Quite the opposite, Neptune's chariot is headed for America – perhaps coming from Spain? – as well as an affable whale, an exotic swordfish and a chubby angel (Figure 8). In these cases the drawing is pleasant, with the rounded outlines akin to present-day child drawings. It appears as if the kind and good figures, the Spaniards, travelled towards the New World. Next to these images a funny ape eating a fish in the middle of the Atlantic Ocean could underscore this feeling of joy and excitement that seems to communicate this scene.

Figure 8. On the Atlantic Ocean Neptune is hunting a whale and looks toward the New World.

However the sea monsters of the Atlantic Ocean are headed in the opposite direction, eastwards: a kind of irate whale in the north –although it looks towards the Spanish vessels traveling to America– , a fearsome but calm whale facing Florida and another giant fish with soft outlines and a threatening look at the right lower corner of the sheet. All of them appear to be headed eastwards moving away from the American coast (Figure 9 and 10). Is the direction of these elements just the product of random choice or whim? Or quite the opposite, would it be plausible that these animals were purposefully headed in these directions?

Figure 9. On the Atlantic Ocean the threatening beasts look towards the east, where the Portuguese are headed to.

Figure 10. Same ocean; animals swimming towards America look kinder.

The author, in his subjectivity, wants to draw a Pacific Ocean more dangerous than the Atlantic Ocean. In the former dragons and whales are observed devouring vessels, if not men (Figure 11). In addition to the monsters inhabiting the seas, the oceans are and appear to be dangerous. The fierce swell is present throughout the represented marine zone; there are vessels battling with the waves in the southern Atlantic Ocean, sinking near the coast of Guatemala, being attacked by whales and enticed by mermaid songs in the stormy waters of the southern Pacific Ocean. The sea seems to be calm only in the Gulf of Mexico and in the Caribbean and this could make direct reference to the nature of these seas. In addition, in these zones there are neither humans nor

fierce animals and this could be interpreted as a metaphor relative to the control under which these zones are kept. On the other hand one may wonder if this calm might be construed as an expression of affect for these lands already belonging to Gutiérrez, as a Spaniard. Could this fact be linked up with the concept of affective cartography?

Figure 11. Dangers on the Pacific Ocean.

Coats of Arms

In addition to clearly outlining Spain's sphere of influence in America, the presence of France and Portugal are also simultaneously recognized in the map, so that three coats of arms appear. The Habsburg Spanish empire coat of arms together with the coat of arms of the French kingdom presides over the map, appearing in the southwest part of the present-day United States. The wedding alliance of the two kingdoms –Elizabeth of Valois, daughter of Henry II, king of France, with Philip II in the summer of 1559– seems to be the reason for showing both coats of arms together on Gutiérrez's map. Nevertheless certain differences are recognized, namely a subtle difference in size –the Spanish shield is bigger than the French one– and another important difference; the Spanish coat of arms is carried by the Angel of Victory while the French shield seems to be falling down and only the small arms of the angels are supporting it. Furthermore the nakedness of the French coat of arms contrasts with the lavish embellishment of the trimmed, festooned Spanish one (Figure 12). Thus the map clearly marks the limits above diplomacy and takes over the new territories claiming the right to its ownership.

Figure 12. The Spanish and French coats of arms presiding over the map.

On the lower part, to the east of Argentina, the shield of the Portuguese kingdom was drawn, whose intended location on the lower margin of the sheet contrasts with the privileged location of the other two (Figure 13). As mentioned above, the Portuguese interests in India remain clearly expressed by means of the fleet traveling that way and this idea is reinforced by the orientation of the Portuguese coat of arms, which from its location on the south looks towards India and is, in addition, carried by a native –the Spanish shield is carried by the

Angel of Victory. An important unknown fact concerning this map and the relationship between Spain and Portugal is the omission of the famous demarcation line.

Figure 13. Portuguese coat of arms on the lower margin of the map.

None of the many map details, some of which have been spelled out in this section, seems to have anything to do with random occurrence or plain whim, but their purpose is indisputable. Another question is whether that purpose is to be attributed to something beyond the purely informative and political interest such as would be realizing the "affective" representation of space as actually perceived by the cartographer producing a map in its spatio-temporal context.

Tools Enabling Study of Map Affectivity

It would be interesting to study in depth, and carry out similar analyses, of other maps; that would perhaps help better understand world perception in those times. However, digitally searching for documents is not yet sufficiently developed to support this task. Currently, it is not easy to find interesting and dynamic tools for in-depth study of the great amount of online maps and iconography. DIGMAP was an initiative that developed solutions for georeferenced and distributed digital libraries, especially focused on historical resources (old maps or related documents). The final results consist in an Internet portal demonstrating services for resources discovery and a set of related professional back-office services. (Pedrosa et al. 2008)

In technical terms, all the services were developed as web-services, available in the Internet through simple but very effective interfaces. This made it possible to provide to the final user a sense of "web 2.0" environment, with integrated services that can be ubiquitously exploited through simple "click and go" actions.

Services for resource discovery are available through searching or browsing. Professional services comprise mainly the cataloguing of new on-line resources, including their geographic indexing. But, it is also possible to process images of digitized resources to extract relevant visual iconographic features. This functionality is particularly attractive to stress peculiar contents existing in old maps.

The DIGMAP iconographic extractor

This iconographic extractor (technically known as "Image Feature Extractor") is a service that enables extracting features from images that have geographic meaning, such as cartouches, map orientations, monsters, mermaids, etc. It was mainly developed by the *Instituto Superior Técnico* of Lisbon (IST), coordinating institution of the DIGMAP Project. For the extraction from digitized maps automatic image processing techniques are applied. Even though not all operations can be automated and some errors occur, advanced image processing

methods can obtain a wide variety of information more quickly than human operators. Using the preliminary information from powerful automatic algorithms, users must only confirm or correct the result (Figure 1).
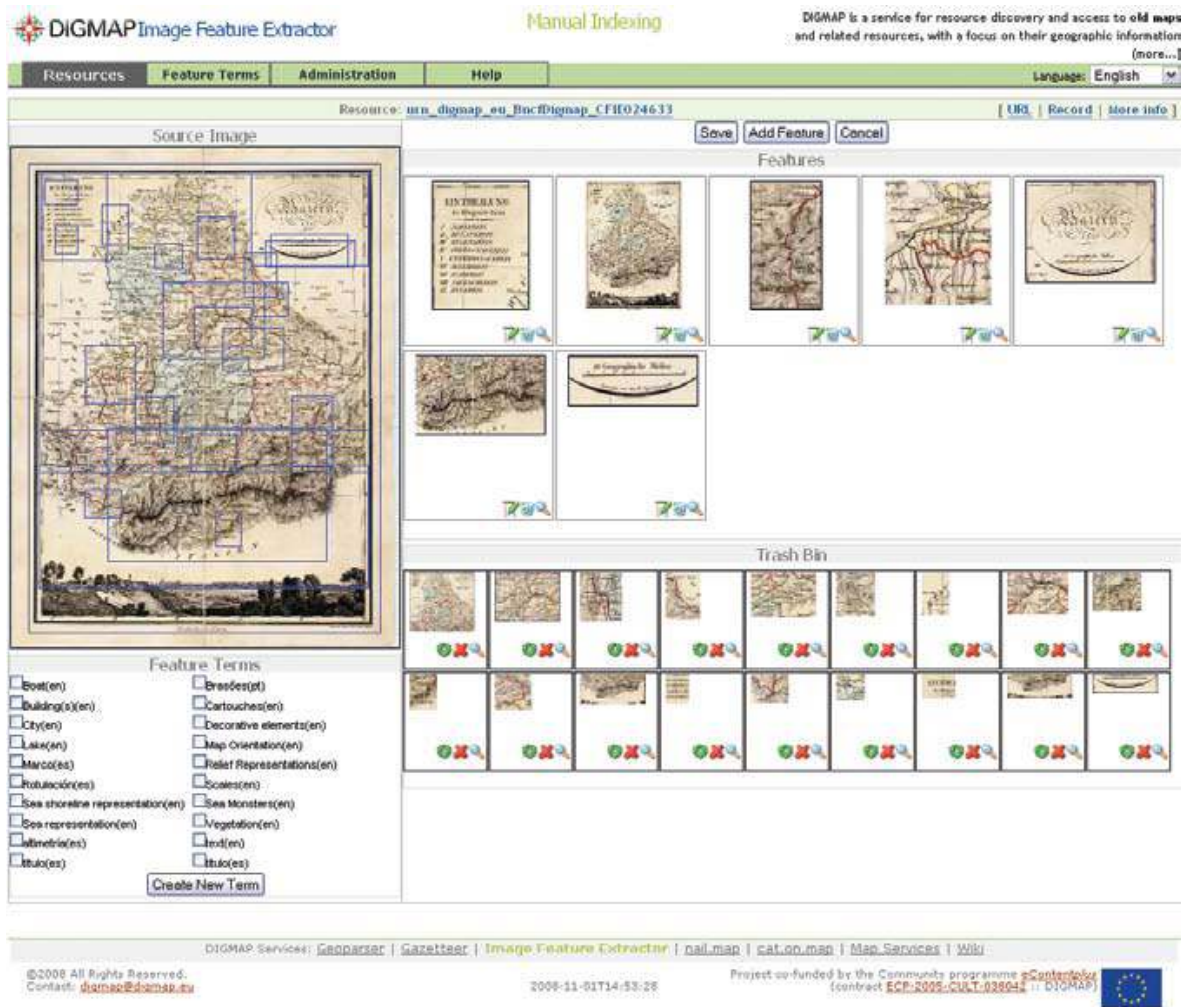

Figure 14: Correction of automatically indexed feature results.

Automatic indexing, especially when old maps and documents are involved, faces substantial difficulties, so such a system is not expected to provide complete and perfect information every time. Thus, users can start automatic indexing for any URLs of images and then accept or reject features, correct existing features, or add new ones (Figure 2). Those segments from the automatic indexing that are not considered as relevant features can be marked as invalid or deleted.

Moreover, it is possible to associate terms to each icon that are stored in a database. This term list comes with a default subset of feature terms, such as Map Orientation, Relief Representation, Boats, etc. Users can be allowed to improve the list with new terms which can also be translated into several languages.
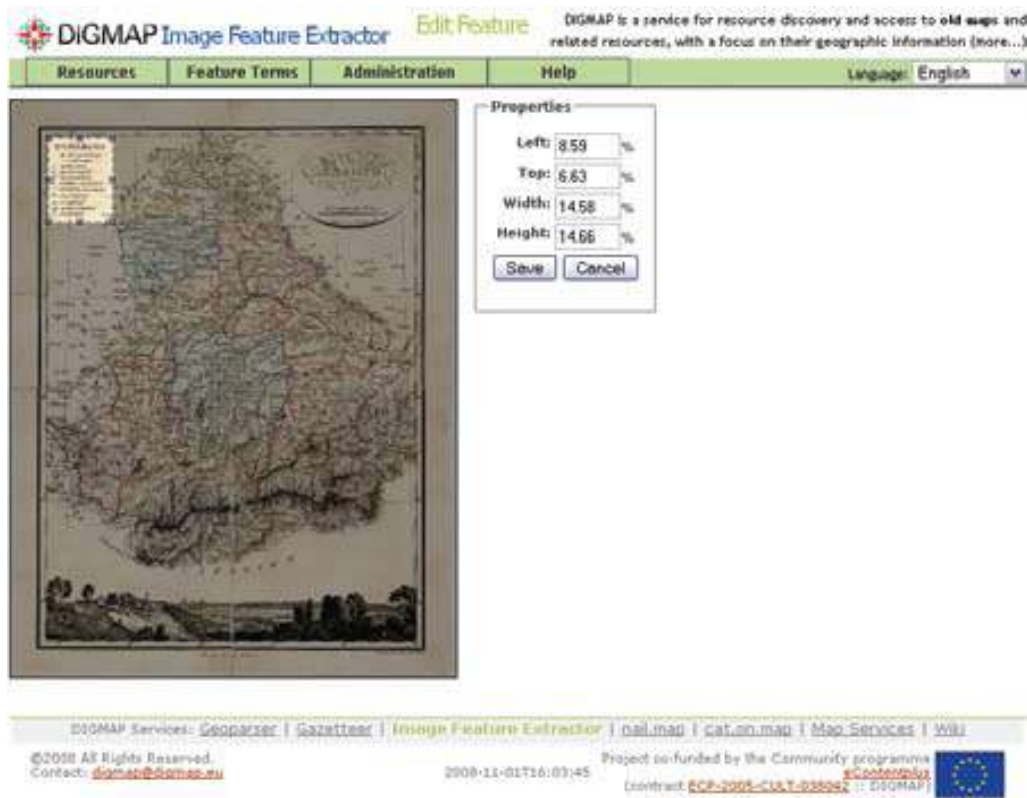
[177]

Figure 15: Adding or correcting map features.

Conclusions and Future Work

In light of the analysis carried out on the Gutiérrez's map, one might envisage the existence of an affective dimension, thus relating the modern concept of affective cartography to the early maps. It is difficult to provide an answer to this hypothesis due to a basic difference, since anything defined as affective cartography requires direct knowledge of the actual living space. This novel cartography approves of the subjective perception of this setting as valid and useful data to be added to still other subjective data. In the case of early maps, this *direct* knowledge of the portrayed regions is questionable; nevertheless there exists knowledge of those regions, even though it is an *indirectly* acquired knowledge, which could be considered the source of affects and emotions modelling the space later communicated through drawn maps. In order to provide conclusive answers supporting or contradicting the hypothetical affective dimension of early maps, it would be necessary to extend this analysis to a number of maps with the support of the appropriate technological tools.

The DIGMAP portal (2008) is now a demonstrative service maintained by the partners, but its lessons and results are available to any interested entity. In fact, DIGMAP itself relies on a large number of other services available in the Internet and in the re-usage of open-source solutions.

From a technical point of view, an interesting development for the future under the umbrella of a new initiative (Bernabé-Poveda 2009) will be to link this Image Feature Extractor to the powerful DIGMAP search engine through a proper user interface. It offers a complete form to search by multiple indexes, which offers numerous options for making your searches more precise (Title, Author, Collection…) and getting more useful results. Additionally, the *Geographic Search* retrieves all the records that contain a specific position, providing the coordinates. Finally, the *Time Search* enables to retrieve records specifying either a year or the time range of results. Thus, it is possible for certain tools, such as the Image Feature Extractor, to be locally installed in research centers and used as a tool to study the affectivity of certain geographies or for the iconographic study in general.

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