Master’s Thesis
Regional Studies
Development Geography

REFLECTIONS ON NATIONAL GEOPOLITICS
–HOW NATIONAL GEOPOLITICS ARE MIRRORED IN WEB MAP SERVICES

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<th>Full Form</th>
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<tr>
<td>AJAX</td>
<td>Asynchronous JavaScript And XML</td>
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<td>GIS</td>
<td>Geographic Information System</td>
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<td>GPS</td>
<td>Global Positioning System</td>
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<td>ISO</td>
<td>International Organization for Standardisation</td>
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<td>LBS</td>
<td>Location Based Service</td>
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<td>Voluntary Geographic Information</td>
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1. Introduction

How often do you read dynamic interactive maps on the Web? I assume that I would not be completely wrong in suggesting daily or weekly, would I? Through all times, maps have been affected by cartographers and their world views, and thus maps have always pictured and portrayed local world views and interests to a greater or lesser extent. The research of for instance J.B. Harley (e.g. 2001), the so called father of critical cartographic research has shown that maps are closely connected to national geopolitics, myths and ideologies. Also Wood (e.g. 1993), Monmonier (e.g. 1996) and Black (1997) among several others have investigated truths that are hidden in maps.

Most research in critical cartography has had to do with traditional paper maps, and nowadays there is an especially big lack of knowledge on how the maps of web map services may be connected to and mirror geopolitical interests. When it comes to dynamic web maps (where the user can interact with the map), there has mostly been some research on usability and technical aspects and functions (e.g. that of Nivala, Brewster & Sarjakoski 2011). The contents of web map services have so far remained in the shadow. Since these maps gain success and have a huge and growing number of users it is of greatest importance to investigate them critically.

This research investigates three different web map services that are all free-of-charge, open for anyone at any time, and that portray the whole world. The web map services origin in different parts of the world: ABmaps is Israeli, Google Maps is American, and Yandex Maps is Russian. It can be noted that it was somewhat challenging to find web map services other than American that meet all the three criteria. Hereby ABmaps and Yandex Maps were included in the investigation since they “were what were found”. Google Maps on the other hand was chosen since it is nowadays a giant in the field and has a huge number of users. Google Maps functions suggestively as a so called trailblazer in the field of web map services because of this.

By investigating the appearance and contents of the maps, the purpose is to find out if, and if yes, then how local national geopolitical agendas, interests, myths, ideologies and world views are mirrored in the maps. A part of the world, here termed “the Heart of the Middle East” has been chosen as the area of study. The so called Heart of the Middle East is located at the eastern and south eastern side of the Mediterranean Sea.
There can be found several border and territorial disputes in the investigated region, and thus it is very appropriate for a similar research. Also toponymic and other disputes appear in the area.

The maps have been investigated with the help of two structured content analyses. The first one of these concentrated especially on map design and tools, and the second one on the critical contents in the studied area. Single map signs and features, and the entireties that these form together have been approached with the help of semiotics, iconography, deconstruction and hermeneutics. Also Barthes’ (1970: 205–258) discussions on myths and their naturalizing purposes have been essential. These methods have been used by a number of researchers, such as for instance Harley (2001), Black (1997) and Kosonen (2000) in critical cartographic investigation.

The most important research questions are:

- What are the map tools and design like?
- What do these tell about the web map service and the intended purposes?
- Are local, national (Israeli, American, Russian) geopolitical agendas, interests, ideologies and myths reflected on the maps and above all, in the studied area?
- If yes, how can these been notified?
- What do the geopolitical reflections that the maps possibly contain tell about the local geopolitical agendas, interests, ideologies and myths?

Overall I expect to find web map services that strive to seem modern, comprehensive, international, and outstanding regarding as well map design and tools, and moreover the critical contents. My assumption is that the maps of the investigated web map services are affected by local geopolitics, and that they do mirror national interests, ideologies and myths. Especially I expect that this is portrayed in how the “own country”, the home country of the investigated service is mapped. The home countries are expected to be put in a positive light and portrayed in profitable and notable ways, such as in a large size and in prominent colors. I assume that the home country is pictured as a developed, powerful society. Neighbors and other countries that are enemies or opponents are on the other expected to be pictured in poor detail and color. At the same time I expect that the cartographers and map designers strive to produce maps that are usable for an as
large audience as possible to attract advertisers and thereby have revenues. This means that the hypothesis is further that also regions outside the own country are described well. Allies or regions with a resembling cultural identity are assumed to be mapped in large detail. Also popular travelling destinations of the own habitats surely contain a large amount of information.

My hypotheses are moreover that the distortions and faults that have to do with geopolitics are well hidden in the maps and difficult to recognize and understand for a naïve reader. I assume further that the web map services want to provide a picture of a stable world to comfort the reader. Furthermore the services surely do not want to confuse the reader or give the impression that the cartographers would not know how borders or the like should be drawn or to whom territories do belong, since this could lessen the reliability of the map services.

The hypotheses of the research are summarized:

- The web map services do imitate the traditional mapping standards but do also provide some “specialities” such as useful tools to edit the map view
- The “own” country is pictured as large and colorful, thus modern and powerful, while opponents and enemies are pictured in poor detail and color
- Also other areas are well-mapped to attract a large amount of users and advertisers and thereby to have revenues. Especially detailed are regions of allies, regions with a resembling cultural identity, and popular destinations
- Geopolitics is well hidden and difficult to notice
- The web maps portray a stable world: do not want to discomfort the reader or give the impression that the cartographers do not know what the world is like
2. Cartography and geopolitics

In this chapter I will discuss the most relevant literature and previous research findings on cartography and critical cartography. Furthermore also geopolitics and international relations will be presented briefly considering the studied area and the home countries of the investigated web map services.

2.1. What is cartography and what is a map

It is not completely easy and unambiguous to define what a map actually is, since maps have considerably varying design and appearance these days. The International Cartographic Association (ICA), that can be seen as one of the world authorities in cartography (Gartner 2012) defines a map with the following:

*A map is a symbolised image of geographical reality, representing selected features or characteristics, resulting from the creative effort of its author's execution of choices, and is designed for use when spatial relationships are of primary relevance.* (ICA 1995)

Also the terms *cartography* and *cartographer* will appear several times in this thesis, and thus it is necessary to define these in the very beginning. Again, according to ICA (1995)

“Cartography is the discipline dealing with the conception, production, dissemination and study of maps” and “A cartographer is a person who engages in cartography”.

Through the ages, maps have played various roles and they have been used for a number of purposes: to portray social hierarchies and order, as tools for investigation of spatial relations, or for instance as archives for data about almost whatever. There has been a great deal of discussion whether cartography is art or science. (Pickles 2004: 9)

The scientific (mathematical, geometrical and other) roots of today’s cartography are found in the ancient Greek theories and they became especially important in Medieval Europe. During the whole 20th century and in the beginning of the 21st century, there has been huge progress in the making of maps, thanks to aerial photography, satellites and other technical innovations and development. (Ehrenberg 2006)

Maps have traditionally been categorized in different types depending on their contents. Hanna (2010: 260), suggests a division into *general purpose maps* (or *multivariate*
maps) and thematic maps. The general purpose maps display a great variety of “general” information concerning the physical and cultural world, and the maps are used for a wide range of purposes in our everyday life, or for instance as school atlases. Thematic maps deal with some specific topic, such as demography or soils. Wood (1995: 20) on the other hand divides today’s maps into three categories: general maps (that display certain physical and cultural features), special purpose maps (that are designed for a certain purpose, like route planning) and special subject maps (that deal with a certain field such as geology). Regardless categorization, all maps consist of signs that refer to the physical and/or cultural reality. (Wood 1995: 21; Hanna 2010: 159)

The reading and interpretation of a map is naturally a highly critical process. Yet simplified, the map communication process is somewhat similar to other forms of communication: codes and signals move between the map and the reader in the same way as messages move between a sender and a receiver in other communicative situations (Kokkonen 1997: 58–59). Reading and interpreting a map, in other words codifying and understanding map signs, relies on a person’s present knowledge, and all readers observe and assimilate certain information more accurately than other (Wood 1995: 13, Lloyd 2011: 362, 364). According to Blancy (1981: 381)

“..communication is always drawn from a particular cultural, linguistic, historical and geographical pool, in other words, from society in which needs are expressed in rituals and myths forming a symbolic whole which makes interchange and sharing possible. This embedding in culture is a consequence of the basis of all symbolism which is expectancy, difference, necessity and the capacity of life to be suspended without being extinguished, since to live is to survive. This momentary absence brings representation by images into play, memory and projection..”

Considering the history of especially Western cartography, one can understand that cartography has been regarded as an accurate science that belongs to an “inside” cartographic community: (the white, male) explorers, surveyors and academics. However, this is not the case anymore. These days it is possible for anyone to act as a cartographer with the help of modern technologies, such as personal computers and the
World Wide Web, and software such as GPS and GIS. (Ehrenberg 2006) It is recognized that the character of cartography is changing from a supply-driven to a demand-driven field, where the everyday users have more power. Web sites that offer so called Voluntary Geographic Information (VGI) tools, like for instance OpenStreetMap (openstreetmap.org), Google Map Maker (google.com/mapmaker) and WikiMapia (wikimapia.org) gain success. On the Web, there seems to be almost endless possibilities for an eager map maker. (Cartwright 2008: 12–19; Peterson 2008: 36–49) Researchers in the field of cartography agree on the fact that users should be provided with broad possibilities to create and design their own maps for their specific needs (Bernier, Bédard, Badard, Hubert 2008: 187–189; Nevile & Ford 2007: 471–485). In the next chapter, we will go on by discussing Web cartography, which certainly is of today’s hottest cartographic topics.

2.2. Maps on the Web

Cartography dates back even a ten thousand years, and hereby electronic maps and maps on Web 2.0 can be seen as nothing but breaking news. Cartography has gone through many changes since the first electronic maps. This is especially thanks to the World Wide Web and Web 2.0 that certainly have transformed the ways in which maps (and geographic information and data) are made, stored, modified and distributed. The Internet, that from the beginning was created to act as a network for US and NATO military and academics, has expanded extremely rapidly since the early 1990s and the invention of the World Wide Web (Calvert, Murray & Smith 1997: 150; Peterson s.a.: 8). In the very beginning of the 21st century, the term Web 2.0 was introduced to describe the new, more open tools and services that are available on the Web. The Web 2.0 is described as an open platform, where users are encouraged to participate in the making and updating of web sites. (What is Web 2.0 2005) Other crucial equipment related to web maps are Global Positioning Systems (GPS), Application Programming Interfaces (APIs), and Asynchronous JavaScript and XML (AJAX).

A map was seen on the World Wide Web for the first time in 1993, with the help of the Mosaic browser that enabled distribution of graphics (Peterson 2008: 3). The first web maps were scanned from paper format, and thus blurry and difficult to comprehend.
These were usually packaged as GIF or JPG-files, but recent formats, such as Scalable Vector Graphics (SVG), have made it possible to store maps in vector format. With this it has become possible for the user to interact with web maps (Cartwright 2008: 23–24). Maps as well as cartographic services and products in electronic and digital format are growing in number, which is termed the digital transition of cartography (Goodchild 1999: 141).

Web maps and web cartography have several advantages compared to paper maps, but also certain disadvantages (that will be discussed later). Through the Web it is possible to collect, store, update and share data and maps between an (almost) uncountable number of users easier, faster and with reduced costs. It is also possible to provide the maps with a number of tools, such as zoom, pan, or change of orientation, projection, scale and coloring. No regions need to be located in margins or corners on maps that can be browsed. This can be seen as a great advantage for regions such as the one that is investigated in this thesis (“the Heart of the Middle East”), since countries that lie in the margins of continents are often pictured in the margins of pages. On web maps, there can moreover be a number of different map layers that can be switched on and off, as well as interactive buttons (so called hot spots), animations, multimedia, menus and hyperlinks that provide further information on a subject. All this make it possible for the reader to analyse information and relationships from several points of view, and in ways not seen before. (Kraak 2001: 14, Kraak2001: 53–71, Ormeling 2007: 109)

Web maps can be categorized depending on their nature. Static maps are still pictures, while on dynamic maps there “happens something”; in other words there is “movement” in the map. On interactive maps it is possible for the user to edit, navigate and control the contents of the map, while view-only maps are “uneditable”. The signs and symbols on view-only maps are similar to those on paper maps, while the signs and symbols on interactive maps can function as hyperlinks, buttons (hot spots), pull down menus and other. (van den Worm 2001: 89)

Today there are countless maps on the Web, and the sites that offer different kinds of cartographic services grow fast. Cartography is becoming collaborative on a worldwide level, but two major challenges have to do with copyright and the financial side, in other words, whether information should be open and free of charge for everyone or not.
Mobile devices and cell phones have already affected cartography, and will surely continue to do so in the future. Cartography seems to be ever more ubiquitous, since maps and geographic information is very important for our daily lives in several ways; there is a greater need for up-to-date information than ever before. As such we can conclude that Web mapping is everything but declining in importance. (Kraak 2001: 1–7; van Elzakker 2001: 21–36; van Elzakker 2001: 37–52; Peterson 2008: 36, 47–48; Artimo 1994: 45–61)

2.2.1. Web map services

Yahoo! Maps (maps.yahoo.com) and MapQuest (www.mapquest.com) were among the first ones to publish web maps with browsing tools. Today, the free online mapping services, such as Yahoo! Maps, MapQuest and obviously Google Maps are of the most visited web sites in many parts of the world. (Geller 2007: 8–13) Particularly popular are user-friendly, free-of-charge map services with information on routes, directions, locations, and other (ibid: 28). For a web site it might be of importance to keep statistics on the number of visitors, because the more “hits” a web page gets, the more it is possible to charge advertisers (Peterson s.a.).

On a web map, place, time and attribute (descriptive data) are linked to each other, and coded in either raster or vector format. Raster format is usually associated with fields and areas, whereas discrete objects such as lines and symbols are coded as vectors. (Longley, Goodchild, Maguire, Rhind 2011: 81, 87) Remote sensing and aerial photography are of the most important ways to collect raster data, while vector data is gathered with the help of global positioning systems and other ground survey methods (ibid 232–235). Dynamic map services are further enabled by technologies such as Asynchronous Javascript and XML (AJAX) and Application Programming Interface (API) (ibid 24–26). All types of collaboration play an important role in today’s GIS–industry, since it can be very expensive, time-consuming and challenging to create maps from scratch. Geographic data is often provided by some external company. 

*Primary data* (direct measurement) and *secondary data* (derivation from other sources) are generally distinguished from each other. The GIS data industry itself, in other words
the gathering and production of data and information, is much more valuable than the software industry. (ibid 229)

Both GI-systems and free-of-charge digital map services have also been criticized despite their great success. It has been stated that the services present a privileged picture of the world, and describe people, phenomena and perspectives in homogeneous ways. Criticizers claim that maps and data serve the interests of the social elite and the providers themselves. Services that are open and free-of-charge are nowadays often subject to politically sensitive disputes. (ibid 324)

2.3. Can the map ever be true?

Maps are distorted in several ways, because it is always necessary to make generalizations, standardisations and simplifications of many kinds. The traditional, naturalist view of the map being a functionalist tool and a mirror of the world was considered as inadequate for the first time in the 1980’s, when the objectivity of cartography was questioned. Today it is well-known, that cartographers are subjective humans and that errors and deception are common. (Pickles 2004) Maps reflect, produce and reproduce dominant world views, values and power relations to a greater or lesser extent. In other words maps mirror contemporary cultural and political characteristics. (Hanna 2010: 159, Wood 1995: 21) Harley (2001: 155) notes two especially striking fallacies associated with maps. The first one is the belief that the more scientific methods that are included in the making of a map, the more precise and accurate the presentation will be. As delusive is the thought that a map contains relevant and correct information simply because it is made by authorities. According to Harley (2001: 57, 64) the myths about cartographic accuracy and political power have been underlined by several factors for centuries. A very interesting suggestion is made by Claude Raffestin (2000: 8), who states that unlike a text, an image does not invite a reader to a critical approach, but that interpretation of pictures is based on an “old corrupted Herodian concept of eyewitness observation” (2000: 8). With this, Raffestin means that we consider something as truth because we have seen it with our own eyes. Harley (2001: 39, 112, 166–167) claims that both external and internal power structures are involved in the making of maps, since external authorities and data affect
the cartographer and his work, while the cartographer on the other hand exercises power over the reader by deciding what knowledge is available. The elimination of states, boundaries, names, or in theory whatever from a map, is equal to complete denial of its existence. (Wood 1993: 106–194; Black 1997: 147–159) Harley (2001: 99) calls this a negative silence. Both authorities and military among others tend to require censorship and so called cartographic silence also on maps that are published by private web map services, such as the ones investigated in this thesis. This censorship and silence can be about diminishing national social, economic and political inequalities, or for instance a demand to leave out or blur certain features. (Monmonier 1996: 122; Black 1997: 88–89, 112–115) The cultural background and for instance the political standpoint play crucial roles in deciding what is included and what is excluded. Robinson (1960: 131) notes aptly, that a river or stream is possibly not marked on a map because of its width, depth or volume, but because of its economic, political or other (cultural) significance.

2.4. The design of maps

Even though the nature of cartography has changed to some extent during the recent decades, certain basic principles still apply concerning for instance the design. One reason to this standardisation of map design is that it has been impossible to standardise map users and map communication. It has been suggested that the so called cartographic standards form the basis to one of the most powerful investigative graphic systems available. (Wood 1993: 24; de Mendonça and Delazari 2011: 164–165)

To begin with the design and visual appearance of a map are extremely important because an obscure and unclear map is useless. The cartographer has to be logical; it can be severely dangerous to ignore certain cartographic conventions, such as marking waters in blue, considering the reader’s possibility to codify the map correctly. For a reader it is easier to recognize something that is visually familiar from before, compared to something that is completely new (Robinson 1960: 225–226; Lindholm & Sarjakoski 1994: 174). The map contents have to form a synthesis, and by interpreting relationships between the signs, the reader should get a big picture. In other words the reader should be able to codify a supersign. Furthermore a map should be effective,
which means that the reader should get an overview of the contents in a glance. (Wood 1993: 52–54)

There are a number of further things to keep in mind when designing maps especially for the Web. First of all it is essential that all the major components (the databases, servers and browsers) are appropriate for displaying maps (Tsou & Curran 2008: 301–303). A web map should not contain contradictions to the traditional cartographic standards, and it is advisable to mention when the map is made or updated, and by whom the data is provided (Bernhard, Helen, Räber 2008: 31–32). Most web users are intolerant and not willing to spend a lot of time on learning to use complex tools or other. Already a loading time of ten seconds seems as extremely long (Nielsen 2000: 44). It can be noted that despite the fact that there has been some research in the field of user centered design (UCD) during last years, there still seems to be a lack of usability testing to find the most appropriate design for web maps and web map services (Wachowicz, Cui, Vullings, Bulens 2008: 399).

2.4.1. Projection and scale

Both the projection and the scale play critical roles on a map, since these can easily and effectively distort sizes and directions when chosen inappropriately. With the help of the projection, the three dimensional Earth is transformed on a two dimensional plane, for instance on a paper or a computer screen. Because of mathematical and technical reasons it is impossible to transform a three dimensional surface without distortions into a two dimensional plane, distortions occur always. A map can be equal-area (areas have right sizes in relation to each other), equidistant (distances are accurate) or conformal (angles are accurate). Especially when portraying larger areas it is beneficial to use a compromised projection, which is a compromise of the three. (Furuti 1997) The scale affects the amount of information that it is possible to show on a map, and the nominal scale tells about the ratio between the Earth’s size and the generated global size. The Earth’s curvature nature causes problems on small scale maps, since the scale does not remain unchangeable across the map even though the scale can remain constant on specific lines. A varying scale causes measurement errors. (DiBiase 2012)
There has been a great amount of debate about map projections and their distorting effects on especially areal sizes. Especially the Mercator projection created in the 16th century for navigational purposes, and has been in great use in especially the Western world, has caused a lot of headache. The closer to the poles one gets on a Mercator, the more enlarged areas are in relation to the tropics. Greenland for instance, is expanded sixteen times and seems larger than whole of South America. De facto Greenland is about the same size as Mexico. (vanVoorst 1988) The American cartographer Mark Monmonier has among others discussed the effects of projections to a great extent (1996; 2004; 2005).

By presenting a region as relatively larger than it actually is, it is possible to state power, threat or right to a voice. The so called Third World has been portrayed as magnified on maps made by charity organizations to augment power and rights. On the other hand for instance Israel has been portrayed as diminished to underline the threat of the surrounding oil/Arab countries. (Monmonier 1996: 87, 94)

2.4.2. Areas, lines and symbols

Maps contain areas, lines and symbols that can be categorized in different ways depending on their appearance. One way is to categorize them into qualitative signs, that represent kind, and in quantitative signs, that represent both amount and kind (Robinson 1960: 137). Another common way is to simply talk about information signs and value signs. Most of the map signs are information signs, but for instance borderlines between countries can be seen as strong value signs, not least during conflicts which have to do with territorial disputes. Value signs have more severe impacts, such as political ones, in “the real life”, and furthermore they tend to appeal to feelings. (Keates1982: 70) Also Peirce’s categorization of signs into iconical, indexial, and symbolical signs (Tarasti 1990: 25–31), applies well on maps. Together several signs form families or entities, in other words, sign systems (Wood 1993: 134–135).

Simplification and generalization is inevitable on maps concerning areas as well as lines and symbols. Especially the generalization of borders is often a critical and difficult
process. (Bertin 2011: 129–130) Single “real world features” are moreover classified; for instance trees are not marked according to art or type, but are simply “trees”. Individual houses can be portrayed as “settled areas”. For the reader, it is naturally important that signs are placed on their real places, where their “real world” counterpart is.

Signs can be separated from each other and one another with the help of size, value, orientation, shape and color. No signs should draw more attention than is equitable. The graphical design should be less complicated on screen maps compared to traditional paper maps. This is because of low screen resolution, and because screen maps have a shorter reading time and a greater reading distance. (Bernhard, Helen, Räber 2008: 39–48) By marking something big and in strong colors, it is easy to steer the reader’s attention or underline something. What is to be hidden, is marked small and in discrete colors, or completely left out. (Monmonier 1996: 18–19, 160) A great amount of distorted maps were produced to mislead antagonists during the World War II and the Cold War, and it was common to misplace watercourses, towns and villages, and coast- and borderlines. (Monmonier 1996: 94–99) Today intentionally distorted maps are especially common in advertisements, but also in for instance newspapers because of lack of knowledge (Monmonier 1996: 110–132; Black 1997).

2.4.3. Colors

The coloring plays a very crucial role on the map, since it affects the design and legibility fundamentally. In graphic design, colors have three different dimensions: a hue, to which we usually refer when we talk about colors (green, red, blue); a value or brightness, in other words how light or dark the hue is; and a saturation, which tells about the hue’s vividness and is dependent on the hue’s intensity. (Monmonier 1996: 164; Brewer 1995: 123–147) On screen maps, the design should include only a few colors, even though most screens today do show millions of colors. Colors should moreover differ from each other to a greater extent compared to paper maps. It is essential to keep in mind that the appearance of colors varies with the rendition of computer hardware and software. Also screen settings (brightness, contrast, color
Colors produce significant subjective emotional and intellectual responses and connotations, which depend on a person’s cultural background (Robinson 2011: 218; Monmonier 1996: 22–173; Robinson 1960: 228–231). Red is generally associated with fire, anger, danger, power, love, blood, heat, courage or communism, while black on the other hand connotes to death, sorrow and pressure. Blue tends to be associated with water, depression, coldness, faith and aristocrats. (Monmonier 1996: 22–173) Robinson (1960: 233) notes that observers seem to agree that the eye is most sensitive to red, green, yellow, blue and purple, in that order. According to Robinson (1960: 227), the contrast is the most important element of the cartographic techniques, since assuming that a feature is large enough to be noticed, it is the contrast between the feature and the background that determinates how easily the feature is observed. A dark hue seems always as darker when it is surrounded by a light one (and vice versa). It can be dangerous to include completely white or blank areas, since they can connote of empty spaces or areas that the cartographer forgot to color. (Monmonier 1996: 22–173) With the help of colors it is very easy to direct the reader’s attention.

2.4.4. Toponymy

When designing text for a map it is necessary to consider the style, form, size, coloring, and positioning of the lettering. The text should contrast to the background and it is moreover not recommendable to have many type styles on a single map. According to general rules, the fewer the styles, the better the harmony. (Robinson 1960: 245, 253) Lettering should be rendered with the help of anti-aliasing, and the type size should be at least 12 points. (Bernhard, Helen, Räber 2008: 41–48) By using big, colorful lettering it is easy to underline the importance of a geographical feature (Black 1997: 43).

The toponymy, the naming and spelling of places and geographical features cause a lot of trouble on maps. This is because many places have several names that vary between languages, ethnical groups, and other. Especially difficult are bilingual and multilingual regions. In all times, this has been utilized as a tool for gaining or popularizing territorial control (Keates 1982: 83). Names are extremely important since they are the
easiest and most convenient way to talk about and refer to places, and moreover they embrace information about the local cultural and linguistic heritage. Place names and other do usually not originate from a geographical location, but have to do with political and cultural heritage. It can be seen as a strong political statement to leave out or change a name on a map. (Black 1997: 43; Valdés 2011) By choosing one or another name or spelling, publishers or providers of web maps can also exclude potential users, which naturally can be considered as a loss in several ways (Kadmon 2004: 87).

In the article *Toponymy and Geopolitics: The Political Use – and Misuse – of Geographic Names* Kadmon (2004) gives several very interesting examples on how toponymy causes struggle and unease. Re-naming of places, streets and other was truly common during colonialism and imperialism (Harley 2001), but also in the last few decades there has been two outstanding periods of politically-based re-naming. The first of these occurred after the end of the World War II, when countries in Africa, the Middle East and in the Pacific regions re-obtained their traditional, local names. (Kadmon 2004: 86–87) One example is India, where former Bombay, Madras and Calcutta are to be called Mumbai, Chennai and Kolkata. The second period of extensive re-naming occurred when the former USSR fell apart in the early 1990s and a number of new countries came into being in Eastern Europe. Today, the Greco-Turkish area is very sensitive to toponymic disputes, and also features such as rivers tend to cause trouble if they run through several countries. The river Danube/Donau/Duna/Dunay/Dunarea functions as a good example (Kadmon 2004: 86–87). Robinson’s (1960: 263) general advice on toponymy is to use the conventional English form when such exists. The most important thing is to be consistent, and not to mix languages and name places, in other words use names like Rio Grande River or Sierra Nevada Mountains. When toponymic disputes become unsolvable countries tend to turn to the United Nations (and The United Nations Conference on the Standardisation of Geographical Names).
2.5. The geopolitical map

It is often considered that the first geopolitical maps were introduced in the age between the World Wars of the 20th century. The term “geopolitical map” was however introduced already in the 1920s. A geopolitical map can be defined as something that compared to a traditional map, portrays several phenomena (political, economic, cultural, social, ethnic, technological) and factors (space, distance, time, relative position). Moreover geopolitical maps tend to ignore traditional scientific standards. (Boria 2008: 278–282) According to Collins-Kreiner (2008: 266) the study of geopolitical texts, narratives and traditions are important fields of study in contemporary geopolitical research. Collins-Kreiner states that in geopolitical cartographic research there is a wakening interest in especially how power structures are related to map projections, scales, semantics and naming of places.

Maps are obviously geopolitical because they have to do with territory and space. Territories are not natural and do not exist in a vacuum, but are produced and reproduced in social contexts. Thus maps can be regarded as “spatial stories” that have to do with ideologies, interest, relationships, or for instance national myths. (Sack 1980: 5–6; Sack 1986: 1–6, 30; Collins-Kreiner 2008: 266, 268) Territorial units and conceptions about both “our” and “your” territory and boundaries build on history and heritage, and these are actively constructed through action. Especially language and discourse play critical roles here. The rhetoric level consists of strong arguments put forward by advertisement, politicians and other. (Paasi 1996: 8–36) In the article Critical Geo-politics Nayak & Jeffrey (2011: 231–254), discuss the French philosopher Michel Foucault’s arguments on the importance of discourse when analysing how certain things are made to seem meaningful, appropriate or as “common sense”. Nayak and Jeffrey consider Said’s work Orientalism (1978) as one of the most appropriate attempts to explore Foucault’s ideas on discourse in practice. In Orientalism, Said examines how “the backward and barbaric other” was created in the 18th and 19th centuries by the West, and how the “we” was seen as a progressive and modern opposite to this (Said 1978: 1–6).

According to Paasi (1996: 13) the spatial dimension is important when defining the “other”. This “other” lives usually in a distant “somewhere there”, while “we” live
“here”. On the other hand, if the “other” then again lives “here”, it is differed from “us” in another way, for instance through linguistic differences. Paasi builds up an analytical framework with socio-spatial integrations and distinctions between “us:es” and “others”. This can be seen below in Table 1. It is important to mention, that the socio-spatial integrations and distinctions do not exist or emerge from a nothing, but are as mentioned, constructed in everyday actions and discourses.

**Table 1. The analytical framework with socio-spatial integrations and distinctions between “us:es” and “others” according to Paasi (1996:14).**

<table>
<thead>
<tr>
<th></th>
<th>Here</th>
<th>There</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>We</strong></td>
<td>Integration within territory</td>
<td>Integration over boundaries</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>Distinction within territory</td>
<td>Distinction between us and the other</td>
</tr>
</tbody>
</table>

Paasi notes that “we/her” are keywords for the first distinction, *integration within territory*. The integration can be of both nation-state-level as well as sub-state-level. *Integration over boundaries* refers to social groups, such as ethnic minorities, that are integrated beyond and despite of boundaries. The third discourse, *distinction within territory* indicates a distinction of several groups within one single territory, while the fourth, *distinction between us and the other* refers to the discussed, distant “other”. The last distinction is especially essential in the construction of otherness and the formation of socio-spatial distinctions between territorial groups. In practice the four distinctions are not static or isolated, but related to each other and in continuous modification. (Paasi1996: 14–15)

Tuathail (1994: 536) notes that Foucault’s writings in *Discipline and Punish* (1979: 170) can be applied when considering how habitats are “trained” to read national maps and to understand the “own” country’s territories and position in the world. According to Tuathail himself, a societal discipline furthermore “invents the procedures by which territories, both domestic and colonial, can be surveyed and controlled, mapped and subdued, taxed and governed” (Tuathail 1994: 536). Throughout history the map has been an effective tool for the one who wants to conquer and control territories (Tuathail 1994), since it is easy to define “our territory” and “your territory” on a map. Maps
function as truly practical tools or “advertisements” during organizational or political campaigns, or for instance on stamps that travel all around the world (Collins–Kreiner 2008: 266, 268; Monmonier 1996: 91, 94). To claim that territories, boundaries and other are marked wrong or ideologically on someone else’s map underlines the rightness of “our own maps and territories”. Such a strategy was utilized for instance during the Cold War, when the USA claimed that the maps of the former USSR were distorted and ideological. (Harley 2001: 156) Because maps have functioned as such effective, intellectual tools for legitimizing control and power, one can say that the pen has become a stronger weapon than the sword (Monmonier 1996: 88–111).

2.6. Contemporary geopolitics

The term “geopolitics” was phrased for the first time by the Swedish political scientist Rudolf Kjellén in 1899 (Nayak & Jeffrey 2011: 236). The contemporary critical geopolitics found its interest in how geographical ideas are created and reproduced, and how policymakers utilize geography to make certain representations of the world seem as natural and legitimate. Today, one important field of geopolitics is the so called popular geopolitics that is concerned with daily features such as popular culture, literature and music. (Nayak & Jeffrey 2011: 241) This research on web map services can possibly be regarded as a part of contemporary popular geopolitical research.

At present, the term “geopolitics” has many definitions and uses. Nayak and Jeffrey (2011: 232–233) notes that the geopolitics of today is as much about geography as it is about identity. When it comes to the contemporary geopolitical world itself consisting of states, territories, borders, power and more, Tuathail (1998: 16–38), suggests that there has been both a reterritorialization and a deterritorialization during the last years. Tuathail refers to a kind of rearrangement of world order, identities, borders, and other, which affect our way of understanding politics, peoples, territories and eventually the whole world. We have seen a shrinking of the USA hegemony, and today we have a number of strong countries and strong transnational institutions such as the European Union and The World Trade Organization, that regulate international, national and interstate markets, politics, and the like. Tuathail (1998: 16–38; 2000: 143) notes that with a growing number of socio-technical networks, informationalized capitalist
relations, and more, the world is shrinking in time and space, and becoming what has been termed a *global village*. Paradoxically, as we become more integrated and connected, we are also more divided and dislocated. Fairly aptly, Tuathail (1999: 17) asks, what quality borders, boundaries and territories, and the geopolitics practiced in relation to these, nowadays have as there are turbulent financial flows, instantaneous telecommunications and for instance transnational dangers.

2.7. **The unsettled Heart of the Middle East**

Shortly speaking the studied area, “the Heart of the Middle East”, is a region where a number of territorial disputes have taken, and still do take place. The home countries of the map services (Israel, Russia, the USA) have all been and still are involved in the disputes. This is why I expect to find ideas about the local political agendas and interests in the web map services that are investigated here. To limit the extension of this research I have chosen to include only a fairly small number of countries (Cyprus, Egypt, the Gaza Strip, Georgia, Israel, Jordan, Lebanon, Syria, Turkey and the West Bank) in the research. This is because I find the quality of the research more important than the quantity; I want to investigate the region thoroughly and carefully.

Succinctly there are a number of complex political processes going on in especially some of the listed countries (such as Israel, the Gaza Strip and Syria), and rapid changes appear almost every day. The roots of today’s episodes lie far back in time. When it comes to political, territorial, religious and other disputes, the circumstances have changed a number of times only during the recent decade. It is not only that countries, territories, ethnic groups and other have struggled against each other, but often the rest of the world has been concerned or behind the conflicts in one way or another. (Blight, Pulham, Torpey 2012; Pappé 2010)

The contemporary conflict between Palestinians and Israelis, which has received major attention internationally, dates back to the 19th or the early 20th century, and is a part of the larger Arab-Israeli-conflict. The dispute begun between Jews and Arabs, and a struggle for control over territory in the Middle East. Countries from all around the world have taken parts in the conflict, and the conflict has expanded to other long-time
disputes in the area. There have been several attempts to find a peaceful solution, but the conflicts proceed. One reason to this is that the dispute has major extension and has to do with for instance territories, borders, water resources, and control over Jerusalem, the holy city of Jews, Christians and Muslims. One crucial note is that Israelis and Palestinians refuse to recognize each other. Israel is surrounded by several contested territories, and there are varying opinions about whom, these belong to. On the border of Israel and Syria in the northeast there is a contested area called the Golan Heights. The region used to be a part of Syria, until Israel annexed it unilaterally in 1981. The annexation has not been approved internationally. Since 1973, there is a United Nations buffer zone in the region, because neither Israel nor Syria has approved a peaceful solution. The Golan Heights play an important role strategically and for instance because of water resources. (Golan Heights profile 2011; Pappé 2010)

Greece and Turkey have combatted over the control over Cyprus for a long time. Today the island is practically divided in two, with the northern part under Turkish control (Turkish Republic of Northern Cyprus), while more than 60 percent is under the control of the Republic of Cyprus (Greece). A buffer zone administered by NATO separate the two from each other. Nevertheless The Republic of Cyprus has de jure control over the whole Island, and the Turkish Republic of Northern Cyprus, is recognized only by Turkey. The heavy disputes on the island concern both the territory and the toponymy. (Cyprus s.a.)

Also on the border between Egypt and Sudan there are on-going territorial disputes. Both Egypt and Sudan claim an area in the east, the so called Hala’ib Triangle on the coast of the Red Sea. On the other hand neither of the countries is interested in an area called Bir Tawil, but claims that the land belongs to the other country. Thus, Bir Tawil is an unclaimed piece of land that belongs to no one. (Bir Tawil 2012).

Two other contested areas in the investigated region are Abkhazia and South Ossetia that are neighbors to Georgia. Whether these territories are independent or not, seems unclear; Abkhazia and South Ossetia are recognized as countries only by a small number of countries, Russia being one of these. The countries have been battling Georgia to gain independence, and for instance in 2008 there was an intensive war. Both Abkhazia and South Ossetia are supported by Russia, while Georgia is supported by the USA. One motive to USA support is above all the location of Georgia, the
country is strategically important to USA. (U.S.-Georgia Strategic Partnership Commission s.a.; Regions and territories: South Ossetia 2012; Georgia country profile 2012)

2.8. Brief highlights on the foreign affairs of Israel, the USA and Russia

As was mentioned in the introduction the home countries of the investigated web map services are Israel, the USA and Russia. Regarding foreign affairs and international relations it is naturally necessary to remember that these seldom are straightforward and concise, and that the notes made here can be regarded as simplifications and generalizations to a greater or lesser extent.

Israel has received an amount of criticism globally, especially because of its problematic relationship to the Palestinians. It is internationally very well known, that Israel and the USA are close allies. Above this Israel generally maintains close relationships to for instance Canada and the United Kingdom, while also India and China have become more important for Israel. The major antagonists, to whom Israel does not maintain a diplomatic relationship consists of Arab countries, many of them located in the Middle East and northern Africa. Egypt and Jordan are exceptions to this even though also the relations to these have fluctuated and been tight especially during heavy upheavals between Israelis and Palestinians. The same thing concerns Israel’s relationship to Turkey. Israel’s severe relationships with many of the Middle Eastern countries, is an important issue considering the area that is studied in this research. (Israel’s Diplomatic Missions Abroad 2012; Pappé 2010)

Generally speaking it can be stated that the USA maintains close relationships to all NATO member states. Above this the USA “co-operates” with a number of countries because of strategic importance, trade partnership or other. As noted, the USA has ties to Israel, which may have affected the relationships to other Middle Eastern countries from time to time. These days, the relationship between for example the USA and Egypt has clearly improved. On the other hand relations to for instance Syria are not warm. (A Guide to the United States' History of Recognition, Diplomatic,… s.a.)
When it comes to the investigated region and its surroundings, Russia for its part has tended to be an ally of Syria and also other Muslim countries such as Egypt and Iran. Currently the relationship to Syria is difficult because of the Syrian civil war; Russia has placed itself between the Syrian regime and the Western countries, of which many have condemned the actions of the regime. Outside the Middle East, China among others has been a partner of Russia (and the former Soviet Union), while the relationships to the USA and also many other Western countries have been fluctuating. (El Bahi 2012)

2.9. Challenges, validity and reliability of the research

There are several issues that pose challenges on this investigation and that affect both the validity and the reliability of the results. To begin with, technical aspects affect the research. The map contents can vary depending on the user’s location or depending on what kind of equipment he uses. Here I do not refer to screen settings and size, but to the fact that for instance in Google Maps, the lettering may vary between different computers; certain computer settings seem to remove local lettering and display names only in English.

As noted, the Web is a “fluid” medium, where contents can change at any given moment. The inconstant nature of the Web is surely one of the biggest challenges to this research, and for a researcher it is naturally not a gratifying thought that all his research material may disappear in the cyber space at any time. Because computer hardware, software, and settings affect how pictures and text are displayed, it is essential to read the maps with the same equipment.

I guess that everyone, and especially every cartographer has an opinion on what the world map looks like, and on how the world should be described. In the same way, every person sees and interprets a map more or less differently. Another great challenge considering the nature of this investigation is to turn off one’s own opinions and expectations as far as possible to avoid partiality. Naturally it is impossible to be completely objective, and thus it is necessary to be reflective on notes and statements. It is always of great importance that the researcher understands his own position and is
critical upon it (Visser & Jones III 2010: 41–59; Dixon 2010: 396). It is possible to investigate the mathematical and geometrical accuracy of certain features on maps, but it is impossible to measure the quantity of power, affluence or rhetoric “misleadingness” of a map. This means that, what I find manipulating or deceiving, someone else possibly does not.

When it comes to my own position, it is essential to note, that I use Google Maps occasionally for private, everyday matters. Sometimes Google Maps also figures in the Finnish media, usually in relation to some dispute, or because of features that are marked severely wrong. Thus, Google Maps is the most familiar to me of the three map services. Despite this, and the fact that Google Maps is a well-known giant, it is crucial to be impartial.

To complete this chapter, a note regarding ethics: it is not my aim to insult or defame the investigated web map services in any way. Maps play a crucial role when people form their concepts and views of the world, and thereby I find it necessary that people understand the relationships between maps and the “real world”. I am interested in raising peoples’ awareness and their own critical thinking and interpretation of all maps. I am not interested in discouraging people from using the investigated services.
3. Study area and research materials

The research material consists of three web map services that are free-of-charge and in theory open to anyone at any time. Registration or similar is not required. Furthermore the web map services picture the whole world. The investigated services are ABmaps from Israel, Google Maps from the USA, and Yandex Maps from Russia, all owned by private companies. The services will be presented further down in this chapter, but before the studied area, “the Heart of the Middle East” will be defined.

3.1. Study area: “The Heart of the Middle East”

The term “Middle East” may at first glance seem unambiguous and also very familiar; the region figures for example often in the daily news. Despite this it is difficult to define the term and region, since there are major differences concerning geography, climate, economies, culture, religion and history between countries, regions and cities, both on interstate and national levels (Dumper & Stanley 2007: xviii). Over time and space, the “Middle East” has been, and still is defined in varying ways when it comes to both territory and characteristics (Culcasi 2010: 583). Usually the Middle East refers to the region south and east of the Mediterranean Sea, stretching at its largest from Morocco to even beyond Iran. At its very largest the term Middle East can refer to all of the following countries: Afghanistan, Algeria, Armenia, Azerbaijian, Bahrain, Cyprus, Djibouti, Egypt, Eritrea, the Gaza Strip, Georgia, Greece, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Pakistan, Qatar, Saudi Arabia, Somalia, South Sudan, Sudan, Syria, Tunisia, Turkey, United Arab Emirates, the West Bank, and Yemen. (Encyclopedia Britannica Middle East 2012; Dumper & Stanley 2007: xviii; CIA 2012; The Political encyclopedia of the Middle East 1999) Suuri Maailmankartasto (the Great World Atlas) (1990), which is translated from German to Finnish, includes Turkey, Syria, Lebanon, Iraq, Jordan, Israel, Kuwait, Cyprus, the north of Saudi-Arabia, the west of Iran and the north of Egypt in a region called Near East (literally translated from the Finnish Lähi-itä). Saudi Arabia, Turkey, eastern Africa, India, Myanmar, Western China, former Soviet Union and Somalia are defined as Southwest Asia (Lounais-Aasia). (1990: 76–79) The completely Finnish Vega
Maailmankartasto (Vega World Atlas) published in 2004 shows a very similar view on this.

I have chosen to include the following countries in the research: Cyprus, Egypt, the Gaza Strip, Georgia, Israel, Jordan, Lebanon, Syria, Turkey and the West Bank. As noted there are certain contested regions in the study area and these will especially be put under a magnifier in the research. The regions are to begin with the borders surrounding Israel, thus the Golan Heights, the West Bank and the Gaza Strip. Moreover Cyprus with its toponymic and territorial disputes plays an important role, as well as the southern border of Egypt (Hala’ib Triangle and Bir Tawil). On interest is also whether Abkhazia and South Ossetia can be found on the maps or not.

3.2. ABmaps: The service of a modern LBS-company

According to the ABmaps Privacy Policy Statement (2009) ABmaps is both owned and operated by a company called Atlas Cartographic Technologies LTD (AtlasCT). In the company’s own words, AtlasCT “is a global leader in maps and location-based services (LBS) technologies for mobile and web applications.” The company was found in 1987 and is based in Ramat Gan in Israel. (About us 2012) Briefly, the company develops, designs, and provides mapping and location based services for the Web and for mobile use. The geographic information is supplied by external map data providers such as NAVTEQ and TeleAtlas, and furthermore by “other local providers”. For instance Nokia uses the mapping solutions of AtlasCT for its mobile search service. (Atlas Cartographic Technologies Ltd. s.a.)

According to siteinfotool.com (2012), the web page abmaps.com itself was established in 1995 and has an estimated 106 visitors per day. The majority of these are from Israel. The page has a net worth of $ 1 062. (Site Info Abmaps 2012) ABmaps offers three “region-specified” versions: one for Israel (abmaps.co.il), one for Russia (abmaps.ru), and one for “the rest of the world” (abmaps.com). The data is identical in all three (Ziv 2012), but in the Israeli edition, features located in Israel are marked in both Hebrew and English, and the web page itself is in Hebrew. In the Russian version, the web page itself is in Russian, while the map is in English and in Latin lettering. I will use the
English version of ABmaps in the research. Since all three versions contain the same data, the search results are not dependent on which version is utilized.

3.3. Google Maps: An obvious world giant

Supposedly almost everyone has heard about the web giant Google at least when it comes to the so called developed part of the world. The google.com site was established in 1997 and is nowadays found in the top ten of probably any rank list over most visited web pages in the world. According to siteinfotool.com (2012) the site has an estimated 379 million visitors daily and a net worth of $ 372 billion. (Site Info Google.com 2012) Here it is essential to note, that the numbers refer to whole of Google.com, not to its map service alone.

Google Maps was introduced in 2005, and has grown extremely fast since that. One reason to this is that the service offered different kinds of possibilities to edit and browse the maps already at early stages, and that Google has been very innovative (Peterson 2008: 9). There are several different country specific versions of Google Maps (for instance maps.google.co.in for India or maps.google.se for Sweden), and the search results and map contents vary more or less depending on which version is used. For instance the marking of borderlines in the Arunachal Pradesh region in northeast India varies between the Indian, Chinese and American versions of Google Maps (Gravois 2010). In this thesis, I investigate the country specific version for the USA (that is maps.google.com). Hereby I expect to find the “American view of the world”.

According to the Terms of service (2012) the geocoding data for Google Maps map content is provided by “NAVTEQ and/or Tele Atlas North America, Inc. ("TANA") and/or other third parties”. In general, Google Maps claims to rely “on widely recognized international standards for naming and mapping”. This concerns also the toponymy that is based on the ISO-3166 standard recognized by the UN Statistics Division. (Terms of service for Google Maps 2012)
3.4. **Yandex Maps: A rapidly growing rival**

Yandex Maps (maps.yandex.ru) is provided by the Russian search service Yandex (yandex.ru). The website yandex.ru was established in 1997 and it has expanded remarkably during the recent years (Yandex cashes in 2011). According to siteinfo.com (2012) yandex.ru has an estimated 16.8 million users daily and the company’s net worth is about $168.92 Million (Site Info Yandex.ru 2012). As with Google, it is essential to note here, that the numbers refer to all services provided by Yandex, not its map service alone. In the company’s own words, Yandex “*is the leading internet company in Russia, operating the most popular search engine and the most visited website. We generated 60.5% of all search traffic in Russia in August 2012.*” (Yandex Today 2012). Google is an apparent world giant when it comes to search engines, but as noted, Yandex has done great progress. In July 2009 there were altogether more than 113.685 billion searches on search engines worldwide. Google was an obvious number one with 76.684 billion searches that month. Yandex was positioned number eight with 1.290 billion searches, with a remarkable 94 per cent increase since July 2008 (Global Search Market… 2009)

Also here the geographic data is supplied by external companies, such as for instance NAVTEQ (Yandex purchases… 2012). The design of the maps is created by the Russian design studio Art Lebedev (Yandex Maps 2004). Yandex Maps provide one of the best, if not *the* best maps found in Russia today (Waldin 2012). Outside Russia Yandex Maps operates in Ukraine and Turkey, and there is furthermore an “international version” of Yandex Maps (maps.yandex.com). In this version the contents differ remarkably from the Russian one, and thus the Russian version is investigated in this thesis.
4. Research methods

Since especially the 1980s the “true nature of maps”, has been critically investigated with the help of several methods and theories from a number of fields: semiotics, hermeneutics, linguistics, structuralism, and phenomenology to name a few (Harley 1989). In line with earlier critical cartographic research (e.g. Black 1997; Kosonen 2000; Pickles 2004) the maps investigated in this thesis are approached with the help of several methods. These will be discussed further down, but before that I will present the structured content analyses that the map design and contents have been approached through.

4.1. Structured content analyses

Two structured content analyses were utilized to make the evaluation of the web maps homogenous and uniform. On a general level content analysis is a method that has been applied in the investigation of visual images, texts, films, radio programs, and other (Van Leeuwen & Jewitt 2004: 10–35; Dixon 2010: 392–407). The first part of the content analyses concentrates especially on the design and tools of the web map services, while the second part focuses on map contents and the studied area, “the Heart of the Middle East”. The evaluated features and aspects were listed beforehand and can be found in Appendix 1. and 2..

Briefly the first part of the structured content analysis begun by investigating the entering page, the page structure (margins and the like), and tools that are external to the map, in other words tools that do not affect the map view itself, but function for instance as hyperlinks. Also the default map (that is seen when entering the site) and its messages were analysed at this point. In the second stage the functions and tools that affect the map view itself were inspected, and after that the map design was put under inspection. Especially coloring of lands and waters played a crucial role in the map design, as well as the appearance of single signs. Naturally there is a great amount of different map signs on all three maps, and hereby the investigated signs were limited to concern borders, roads and cities above all. At this fourth stage also the toponymy, in other words how names are marked and written were investigated. At the fifth and last
stage of the first structured content analysis the utilized projection and scale of the maps was examined.

As mentioned the second part of the structured content analysis continued by investigating “the Heart of the Middle East”. The research concentrated especially on areas that were discussed in the theoretical framework, thus 1) the disputed borders of Israel 2) the contested island Cyprus 3) the border conflicts of Bir Tawil and the Hala’ib Triangle and 4) the existence/non-existence of South Ossetia and Abkhazia. Above this, the studied area was researched on a “general level”. Here markings of borders and territories played a very essential role. Toponymy, and for instance the marking of cities was also an important part, as well as the investigation of how detailed (large scaled) maps that the services provide.

4.2. From entitities to components, and back to entitities

When analysing the contents of the maps it was necessary to “split up” the contents of the web pages and above all the maps themselves, to find out what signs symbolize and what messages they send. Hereby, signs were analysed one by one, and it was important to detect and discriminate single signs and features, and analyse for instance their coloring, size, and location on the map. According to Peirce, objects, such as map signs, have a threefold nature (icon, index, symbol), and also their interpretation is threefold (object, representamen, interpretant) (Tarasti: 1990: 25–31). The map signs were further analysed as a whole, as the entitities they together build up. The investigation of the map contents relied on deconstructive and iconographical approaches, as well as on hermeneutics. Both the iconographical and the hermeneutical approaches emphasize that signs have to been analysed in a similar way, one by one, and further bound to a larger framework, to an entirety. In hermeneutics this is termed the hermeneutical circle. With this kind of critical investigation it is possible to reveal what may be mistaken as common sense or what possibly is difficult to realize without more careful, deeper analysis. Both the deconstructive and the hermeneutical approaches underline that there are no single truths, since reality is what we make of it. (Dixon 2010: 392–407; Dekostruktio, jyväskylänyliop. s.a.; Deconstuction 2009; Harley 2001; Damisch 1975: 236–242; Visser& Jones III 2010: 42) It is essential to note that also Roland Barthes’
(1970: 205–258) discussions on myths and their naturalizing purposes played an important role in the search for hidden or for instance naturalizing messages.

Thus summarized, the research process begun by detecting single signs. By analysing the appearance of the signs and by binding them to the “real world” it was possible to understand what the signs symbolize. A third step was the analysing of the big picture, the entirety that the signs together form, and by this evaluate what messages the maps send. These messages were further reflected on in relation to literature on territorial, political, and other disputes that have taken and take place especially the investigated “Heart of the Middle East”.
5. Results

In this chapter I will go through the results. I will begin by presenting the results of the first part of the structured content analysis. The map services will be discussed one by one, and after this the results will be compared with each other in synthetic discussions. The results of the second part of the structured analysis will be presented in section 5.2., where the web map services are again discussed one by one, followed by syntheses. It is essential to note concerning the pictures and maps that these have been taken as print screens. Certain pictures have been cropped to be able to portray a certain detail better. The caption contains the date of the print screen.

5.1. Structured content analysis 1: Map tools and design

5.1.1. ABmaps

*Entering page and map external tools*

The entering page of ABmaps can be seen below in Fig. 1. The default map pictures Israel. The same picture can be seen as larger in Appendix 3.

*Figure 1.* The entering page and default map of ABmaps pictures Israel as very colourful, while the surrounding regions contain a limited amount of information. The same picture can be found as larger in Appendix 3. (21.3.2013)
There are altogether four margins on the page: two on the top of the page, one on the left side, and one down on the page. The left one and the lower of the top margins can be hidden, and thus the map frame itself is enlarged. In the left corner of the upper margin there is a colorful, big ABmaps-logo, and three symbols ("Maps", "API", "GPS Navigation for mobile"), of which the last two work as hyperlinks to external sites. In the upper margin, there are furthermore five hyperlinks ("Ads by Google", "Get Map", "Earth Maps", "Map Route", "Satellite Map") that take the user to external sites. It is possible to give feedback on ABmaps through a thumb up-symbol located on the right. The left margin that functions as a scroll down menu provides a number of tools, for instance layers on weather and traffic conditions. With the help of separate symbols the map can be shared on Facebook, Twitter or YouTube, or it can be added to one’s Favorites. Below these, a colorful advertisement on a Mobile Map Application attracts the eye. Further below is a discrete colored Finnish advertisement that changes occasionally. In the bottom margin there are options such as “Print”, “Send to a friend”, “Link to map”, “Share”, “Information on Israel’s cities”, “Privacy Policy”, and “Terms of Use”. A legend opens up in a new window through the “Legend”-link. The legend will be discussed further down. The data providers (© AtlasCT, © NAVTEQ, © Foreca, © Mapa, © Ofek and © Decell) are mentioned in the lower part of the map, and the signs work as hyperlinks to the companies’ websites.

**Functions and tools that affect the map contents**

ABmaps provides several tools and functions to browse, pan, and zoom the map. In the lower of the two top margins, there is a country menu, a list of the countries in which it is possible to search for locations. The listed countries are Andorra, Belgium, France, Germany, India, Israel, Italy, Luxemburg, Netherlands, Portugal, Singapore, Spain, and the USA. As noted, there are three different versions of ABmaps (abmaps.co.il, abmaps.ru and abmaps.com), and the version can be changed through a menu next to the country menu. A search box can be found in the upper margin. The correct country has to be selected here when searching for a certain place; in other words for instance France has to be selected when searching for Paris. A successful search is displayed on the map with a blinking red-green symbol. If the search tool finds several search results, these are listed in the left margin.

The left margin contains a tool called Points of Interest through which it is possible to switch on different map layers. The points include a wide range of features, anything
between helicopter landing pads, embassies, heritage sites, springs and observation sites. All of these have their own symbols that appear on the map when switched on. It is notable that the points apply only for Israel. From a tool on the right side the map view can be changed to satellite or hybrid (that contains both satellite picture and map signs). On the left there is a measuring instrument, two zoom tools symbolized by a magnifier and a “pillar”, and three tools for panning and browsing the map. The pointer appears as a hand on the map, and geographical coordinates are seen in a small white box when moving the hand over the map. The map can be browsed by clicking on the left of the mouse. Above this there are additional tools for weather and traffic conditions as well as a tool symbolized by a megaphone. When activating this megaphone “The Gaza Rocket Ranges” and the following text appear on the map (originally in Hebrew, but here translated to English with the help of translation.babylon.com) “Emergency map – map information alert areas served as a service to the public by the Atlas C.t. More information about alert areas, or any other subject, can be found on the Home Front Command. * company Atlas C.t makes no accuracy data that are displayed, the data that are displayed on the Home Front Command are requiring closed.” A picture of the map with the Gaza Rocket Ranges activate can be found in Fig 2. It seems that this is some kind of a temporary layer, since only a few days later the tool has been removed (spotted 30.12.2012 and removed 5.1.2013). Also the coloring of the web page itself is a bit different here as can be seen.

Figure 2. For a limited time, only a couple of days in the year end 2012, it was possible to switch on the “Gaza rocket ranges”. (30.12.2012)
Above these tools, a small white arrow in the right down corner opens up an index overview map. The tools that affect the map contents, perhaps thus the most important tools, are fairly easy to notice. They are also fairly easy to use (all dependent naturally on the reader’s previous knowledge), even though there is no advice on how they function. ABmaps provides as noted, several tools for certain single functions, such as for zooming and browsing the map.

Map design: coloring and signs
On smaller scale levels the coloring pictures the topography or the terrain as can be seen in Fig. 3. Generally speaking it can be summarized that the coloring and signs on levels with a smaller scale follow traditional mapping standards.

![Figure 3. The smallest available scale of ABmaps is 2000 kilometers. The whole world does not fit in one frame. (21.3.2013)](image)

When it comes to larger scale levels, certain parts of the world are colorful and bright, while others contain only black signs on a gray background. Israel, and furthermore countries, regions or cities such as the USA, Western and Northern Europe, South Africa, Moscow, Singapore, Sao Paolo, and New Delhi (that can be seen in Fig. 4), belong to the first mentioned, while for instance Eastern Asia, large parts of South America, New Zealand, Australia and Africa are portrayed in a very limited number of colors. The map of Japan that is found in Fig. 5 portrays the regions of the latter ones.
Figure 4. New Delhi belongs to the areas from where it is possible to find a detailed map, all the way down to street level, in ABmaps. (21.3.2013)

Figure 5. From Japan and many other parts of Asia the maps of ABmaps are not more detailed than this. (21.3.2013)

How detailed maps are provided is not in relations to whether the actual country can be found in the country menu or not; even though a country can be found in the country menu it does not mean that ABmaps provides a thorough and detailed map over the country. Such is the case with for instance Russia, where great parts lack any kind of information. On larger scale levels the world is anything but equally marked in ABmaps, and it can roughly speaking be considered that the design and coloring follows a division in three. Israel creates a primary category with a great amount of information.
Places such as Europe, South Africa and the USA constitute “secondary” areas, since they contain a number of colors and are mapped fairly detailed. Large parts of for instance Asia, South America and Africa create the third category with very poorly detailed black-gray areas. On smaller scale levels the world map of ABmaps creates a more coherent whole picturing the topography and an even number of cities and waters in all parts of the world.

As noted a legend is available behind the Legend-link. The legend opens up in a new window and is here found in Fig. 6.

![Figure 6. The legend of ABmaps. Here cut and cropped to sections since the legend functions as a scroll-down menu. (21.3.2013)](image_url)

Shortly, seas and lakes have own blue values, and streams are marked as blue lines. Also international borders are marked as blue lines, while the so called Green Line that refers to the demarcation lines of 1949 Armistice Agreements between Israel and neighboring Egypt, Lebanon, Jordan, and Syria, is marked in green. All borderlines are of “stable nature” and have the same value. Thus there is no such conception as an unstable or disputed border. The “Security Control” - category compromises hues for two different areas, A and B. These refer to the administrative division of the Gaza Strip and the West Bank that was created during the Interim Agreement on the West
Bank and the Gaza Strip in Oslo in 1993. In A-areas, there are full civil and security control by the Palestinian Authority, without permitted access of Israelis. Thus, these areas contain Palestinian cities and settlements. In B-areas there is civil control by Palestinians, and security control by both Palestinian and Israeli authorities. During the Oslo agreement, also C-areas were defined. (Västbankens ABC s.a.) C-areas are not marked in ABmaps, but refer to areas with complete control of Israeli authorities. As seen in the legend, there are ten different symbols for different roads, and above this, a separate symbol for railroads, as well as for traffic lights and driving direction. 13 different hues picture building and public places, while cities of different sizes are pictured by four symbols according to the legend. Above the advice of the legend the map contains cities that are symbolized by black, uncolored or purple squares.

Features are marked in different lettering styles. Waters are for instance marked in blue italics, country names in blue bold, certain islands in red italics, and cities in black (bolded or not, depending on the city’s size). All text is shadowed in white. The size of the type varies throughout the map depending on feature, zoom level, and so on. All text is in Latin lettering, except for Russia and Greece, where certain names can be found in local lettering. Names appear worldwide in local languages or in an “international version” (English). I will return to the toponymy further down when discussing the geopolitical aspects of the maps.

**Projection and scale**
ABmaps utilizes a Mercator projection for its maps (Ziv 2012). A picture of the smallest possible scale can be found a few pages back in Fig. 3. The current scale is shown by both a scale bar and numbers in the down left corner. The unit is given in kilometers and in meters, and the scale naturally changes when zooming in or out. Moreover the length of the scale bar changes when browsing the map. As noted, the map is browsed with the help of the pan and zoom tools. The scale (zoom) changes stepwise.

5.1.2. Google Maps

*Entering page and map external tools*
A map of the USA is what appears when entering the page maps.google.com. This can be seen below in Fig. 7 and as a larger picturing in Appendix 4.
There are three margins on the page, two on top of the page and one on the left side. The left margin and the lower of the top margins can be hidden. In the upper margin on top of the page, there are hyperlinks to the most common services that Google provide (Google general search, Google search for pictures, Google search for maps (currently switched on), Google Play, YouTube, Gmail, Google Drive, Calendar, and More). Moreover there is a possibility to log in to a Google account. A colorful Google-logo can be found below. Down in the left margin are options such as “Help”, “Maps Labs” (that offers different kinds of tools for instance for measurements on the map), “Terms of Use” and “Privacy Policy”. The provider of map data for a current frame is shown in the down corner on the right side. The providers change when browsing the map. There are no external advertisements on the page, only hyperlinks to tools and services provided by Google or its affiliates.

**Functions and tools that affect the map contents**

Google Maps contains as default basic tools for panning, browsing and for instance zooming the map. A search box can be found on top of the page, in the lower of the top margins. When the user begins to type a word in the search box, he/she is offered suggestions on locations and places. All search results appear as pins on the map, and further information, such as photographs from the location, appear in the left margin. In the left margin the user can find tools such as search for directions, and registration of “own places” or one’s own company on the Google map (requires that the user has a
Google account). With the help of a tool located in the upper right corner of the map frame it is possible to change to satellite view or to the Google Earth-service. Furthermore a popup menu offers different layers, such as traffic conditions, photographs, weather, terrain, and web cameras. It is also possible to switch on layers that hyperlink all YouTube- videos or Wikipedia sites (Fig. 8) that are “tagged” to different locations. When clicking on a W, the user is taken to that certain external Wikipedia-site.

Figure 8. The world map of Google Maps with the Wikipedia-layer switched on. When clicking on a “W” the user is taken to the external Wikipedia-site. (21.3.2012)

In the down right corner there is furthermore an arrow that opens up a small index overview map. On the left in the map frame itself there are tools for zooming and panning. With the help of the orange man located on the zoom tool it is possible to change the map view to the so called street view-option. The pointer appears on the map as a hand, and the map can be browsed by clicking on the left of the mouse. The coloring of both the background and the tools is pale and thus depending on world region (and thereby coloring of the background), the tools are sometimes slightly difficult to notice. As noted, help and guidance on how to use the tools can be found behind a link.
Map design: coloring and signs

The coloring pictures the topography on smaller scale levels as can be seen from the picture above, portraying the default map on the entering page of Google Maps. As with ABmaps, the traditional mapping standards are utilized to a fairly great extent. The coloring changes to pale green or white as the user zooms in and the scale gets larger.

The maps of Google Maps create a coherent entity, even though the maps are naturally not equally detailed in all parts of the world. The home country (the USA) plays an important role and there can be found street level maps from almost all places, even small towns with less than 2500 inhabitants (such as Haynesville, Louisiana). On the other hand it must be noted that is possible to find street maps also from many other small places in the world. In Google Maps, only peripheries such as deserts or mountain ranges are mapped in less detail. For instance the maps of Western China or northern Burma are limited in information. Even though the maps of Google Maps are detailed, most information is available only on the levels with a large scale. This is portrayed in Fig. 9, where it is possible to see a fairly poor amount of information. The map pictures the Nordic countries.

Figure 9. The map of Google Maps contains only a small amount of information on smaller scales. This can be seen for instance in that simply few cities are marked on the map. (21.3.2013)
In other words the most beneficial information is found only if the user has the patience to scroll and zoom in, and thus the user may miss out on what beneficial information Google Maps has to offer. Inland waters as an example are very poorly marked or named, which is a dismerit in my opinion. It is seldom possible to find the names of inland waters. Not even a fairly large increase in the amount of information should make the map obscure or indistinct, since the amount of information is that limited at the moment.

There does not seem to exist any official legend for the maps of Google Maps. In 2008 this was explained with the fact that there are such a lot of symbols, that it is impossible to make one comprehensive legend covering all signs (Google Maps legend? 2008). Solid black lines refer to stable international borders, while light dashes lines separate states, regions or counties. Dashed lines with a darker value than the previous refer to disputable or ambiguous borders. It is possible to make such a conclusion, since for instance the borders between West Sahara and Morocco, Somalia and Ethiopia, and northern India and Pakistan are marked like this. It is commonly known that these areas contain disputed borders and territories. Disputed areas can furthermore be marked as dotted lines, as some parts of Northern India are. Due to the lack of a legend, it remains unknown how the dashed and dotted lines differ from each other. Roads are usually marked in white, yellow or orange (depending on the size of the road and the scale). Japan on the other hand contains also green roads, as can be seen in Fig. 10, while Great Britain contains both green and blue roads to imitate the mapping standards of those countries.
**Figure 10.** Roads are also marked in green in Japan, beyond the ordinary orange, yellow and white. From the map it is also possible to see other discussed features: lettering is in local language, the waters are rarely named on smaller scales, and cities are marked in the same way, instead of having separate symbols for capitals. (21.3.2013)

Railroads can be found only on larger scales and are marked in very light gray. Capitals, cities and towns are always marked as white dots and the size of the dot or the lettering tells about the size of the city. It can be clarified here, that capitals and other cities and towns are marked with same symbols.

The lettering is always in black for features on land and in blue italics for waters. All names are shadowed in white. Depending on area and region, names can be marked both in local language and alphabet and in English and Latin alphabet, or on the other hand merely in the local language and spelling, or English and Latin lettering. The size of the font varies throughout the map depending on feature, zoom level, and so on, but is generally speaking legible.

*Projection and scale*
Google Maps utilizes a Mercator projection for its maps (Why does Google maps use… 2009). The whole world can never be pictured in the same frame since it does not fit in. One framing of the world map can be found in Fig. 11. The scale is portrayed by both a scale bar and numbers in the down left corner and the scale changes stepwise. The unit is given is miles/feet and kilometers/meters.
5.1.3. Yandex Maps

*Entering page and map external tools*

The entering page of Yandex Maps is found below in Fig. 12. Yandex Maps service seems to recognize the location of the user, since the default map pictures Helsinki metropolitan area, and at that actual moment I am located in the very center of the city.

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**Figure 11.** Small scaled map of Google Maps. (21.3.2013)

**Figure 12.** The entering page and default map of Yandex Maps pictures the location of the user, in this case Helsinki metropolitan area. The same picture can be found as larger in Appendix 5. (21.3.2013)
There are two margins on the page, one on the top and one on the left side. The latter of these can be hidden. In the upper margin there are links to other services offered by Yandex (general search, email, map service (currently activated), markets, news, dictionary, blogs, search for videos, search for pictures, and mobile applications). Moreover the user can log in to a Yandex-account, or print or share the map. In the upper margin there is a black-red-green Yandex Maps-logo.

In the left margin there are hyperlinks to a number of services provided by Yandex Maps: a directory of national companies and organizations, underground maps, the so called people’s map created by the users, and mobile maps. At times there is an external advertisement in the left margin; though sometimes there is no ad at all. Through a link down on the page it is possible to inform the providers (cartographers at Yandex Maps) about incorrect map data. Further map external tools and services contain “Print”, “Link” (share), “Statistics and other tools”, “Help”, “Blogs” and “APIs”. Down on the page is a link to User agreements.

**Functions and tools that affect the map contents**

Also Yandex Maps provides the user a number of basic tools. On top of the page is a search box, that accepts both Latin and Cyrillic lettering and gives the user suggestions on locations as he/she begins to type a word. Search results appear as blue-white symbols on the map and some further information, depending on the nature of the search, appears in the left margin. The user can search for routes or mark “own places” with the help of tools found in the left margin. These can also be activated by clicking on the right button of the mouse. A symbol of a hot-air balloon activates a bird’s eye view of Saint Petersburg. From the upper right corner of the map frame it is possible to switch on traffic conditions, or to change the view to satellite or hybrid view (that contains both a satellite picture and map data). Moreover a map made by Yandex’ users (based on VGI) can be switched on. Down on the page is an index overview map as default, but it is possible to hide the map. Tools for browsing, zooming, measuring, route finding and marking of places are found in the upper left corner of the map frame. There is also a tool that is supposed to provide information on the user’s current location when activated, but when trying this there appears a text saying that no exact location could be determined. The pointer appears on the map as either a cursor or a hand, with which it is possible to browse the map.
The tools can roughly speaking be considered to be as easy or difficult to use as the ones in Google Maps or ABmaps, since they function in a very similar way. The tools in Yandex Maps are fairly small and thus not necessarily very easy to notice. From behind a link the user is provided with guidance and help on how to use the tools.

**Map design: coloring and signs**

In Yandex Maps countries are colored in pastel hues on levels with a smaller scale as can be seen in Fig. 13. Several countries have the same color, even though they are not “related to each other”. For instance Finland, Mongolia, Chad and the Czech Republic have the same light purple hue. One of the hues is very similar to that of inland water and seas. Russia is the only country that is not colored similarly with another area, and moreover there are two completely white regions: Antarctica and Belize.

![Figure 13. The world map of Yandex Maps. Russia is the only country that has a very own hue, while other countries “share” the same hue with a few other countries. (21.3.2013)](image)

On levels with a larger scale the coloring imitates the topography in certain regions (Fig. 14), while in others the background is colored simply yellow (Fig. 15). The figures below that picture Buenos Aires portray this. Yandex Maps provides more detailed and maps with larger scales from the areas with “topographic coloring” (such as for instance from Sweden) compared to the yellow areas.
Yandex Maps treats different parts of the world unequally, particularly on the levels with larger scales. Europe (with Turkey included) is clearly in the interest of Yandex Maps, as well as naturally the home country Russia is. Beyond this, the rest of the world is portrayed pretty homogenously. There can usually not be found maps with larger scales outside Russia and Europe. This applies also to important metropolis such as New York or Tokyo.
No official legend can be found for Yandex Maps in spite of thorough search. From the map it can be codified that international boundaries are marked with a gray dash-dot-lines on levels with pastel coloring. On larger scales the coloring of borders is yellow-red. Disputable or unstable borders are marked on smaller scales in the same way as the stable borders, but as a bit lighter and thinner lines. On larger scales, the disputable borders are marked either with a dash-dot-line in green and yellow or in a dashed yellow-red line. Solid black lines refer to county borders, but are marked only for Russia. Roads are generally marked in brown, but on the largest scales in white and yellow. Dashed black-grey lines refer to railroads. Red quadrangles symbolize capital cities, while other cities are symbolized by white dots. Blue anchors stand for harbors.

All names are marked in Russian and in the Russian (Cyrillic) alphabet. Country names are marked in brown italics, while waters are in blue italics. Capitals, other cities and for instance roads are lettered in black, islands on the other hand in black italics. Names are always marked in their Russian version, if one such exists. There can also be found a number of shortenings, for instance “Зал.” for the word ЗАЛИВ referring to gulf or bay (e.g. Gulf of Iskenderun). The size of the type varies throughout the map depending on feature, zoom level, and so on. The text is usually shadowed in white, but despite this certain names are challenging to comprehend.

**Projection and scale**
Like ABmaps and Google Maps, also Yandex Maps utilizes a Mercator projection (Coordinates and projection 2013). The contemporary scale can be found in the down right corner portrayed by a scale bar and lettering. The unit is given in kilometers and meters. Again, the scale changes stepwise. When the scale is at its smallest the world can be seen fourfold (Fig. 16). The zoom tool in Yandex Maps varies in length depending on how much it is possible to zoom in.
Figure 16. Smallest possible scale of Yandex Maps. The world can be seen as fourfold. (21.3.2013)

It is possible to switch on a geographic grid that naturally helps the user to understand how sizes are pictured. Below, in Fig. 17 is a map with the grid layer switched on.

Figure 17. In Yandex Maps it is possible to switch on a grid layer, which helps the user to understand how the projection distorts the sizes of regions on different latitudes. (18.11.2012)
5.1.4. Bringing the results together in comparative synthesis

*Entering page and map external tools*
To begin with, the default maps that are seen when entering the sites display very different areas in the three web map services. Yandex Maps is the only service that codifies where the user is located, while the two other can be considered to “promote” the map service’s home country by displaying Israel (ABmaps) and the USA (Google Maps). On the other hand it must be noted that the map external text in Google Maps is in Finnish, and that the user’s location is thus “taken in consideration”. When it comes to the investigated web map services, it is of course possible to browse the maps, but still the placing of the “own” country as the default map, can be regarded as “advertising”. Also the fact that Israel is selected as default in the country menu in ABmaps, can be codified as a kind of promotion of the home country, as well as the Russian lettering in Yandex Maps.

The general appearance of the web sites is quite different, especially that of ABmaps on one hand, and that of Google Maps and Yandex Maps on the other. ABmaps is the most colorful and vibrant considering both the map and for instance advertisements, while both Google Maps and Yandex Maps contain both fewer and paler colors on a whole. Hereby the entering site of ABmaps can be called the liveliest, possibly even the messiest, while Google Maps and Yandex Maps seem more placid to the eye. In both Google Maps and Yandex Maps the map itself catches the reader’s eye immediately, since the margins are white and contain a limited amount of text in concise coloring. Naturally, the more information, tools, and colors there are utilized, the harder it is and the longer it takes for the reader to find what he is looking for. It is furthermore generally difficult to concentrate and focus on the most important, the map itself, if the appearance of the web page is very busy as a whole. The coloring of the maps themselves will be more comprehensively discussed further down.

It is very interesting to note that the page structures are remarkably similar in all three services. They all contain for instance a margin with tools and possible advertisements on the left side, a search box on the top of the page, zoom, pan and other tools in the upper left corner of the map frame, and options to change the map view in the upper right corner. Down on the pages are information on data as well as index maps. I can
not help but wonder if it is so that newcomers or smaller providers apply the same appearance and tools that well-known services utilize? Google Maps differs from the other two in that it does not contain external advertisements, only adds on services offered by itself or its affiliates. This is surely to make the readers’ experience of the page more enjoyable, and furthermore it may increase the site’s credibility. It is possible that Google is the only one of the three that financially has the opportunity to not contain external advertisements. It can naturally be considered as the better, the fewer advertisements a web map service contains, since by this the map reading is less distracted. In both ABmaps and Yandex Maps the advertisements can be found in the left margin. The ads of ABmaps are significantly more apparent than those of Yandex Maps.

*Functions and tools that affect the map contents*
Above the page structures, all three services offer very similar map tools. The zoom and pan tools work effectively, although they sometimes “freeze” and refuse to stop downloading (the map frame is hereby not updated). This is however not necessarily the services’ fault, but can be caused by slow Internet connection. It can be considered as beneficial that the zoom tool in Yandex Maps varies in length depending on how much it is possible to zoom in. The zoom tools are relatively easy to notice, even though they are quite small and the ones in Google Maps and Yandex Maps are colored white and thus not especially prominent compared to the background coloring. The design and placing of the tools is very concise in all services, which can be seen as beneficial, since the interpretation of the maps themselves is not interrupted. ABmaps provides a higher number of tools and functions to for instance pan and browse the map compared to Google Maps and Yandex Maps. Generally speaking it is more important to provide one tool (for instance for zooming), that is useful, easy to find, and simple, beneficial and effective to use, instead of having several tools (for one single purpose) that are difficult to notice or use.

When it comes to the search boxes, there are some differences between the map services. The search tool of ABmaps is naturally the most simplified and limited because it is possible to make searches only in a number (13) of countries. When the user wants to make a search, he has to understand that the country in question must be selected in the country menu. Since there is no advice on this, it is on the user’s
responsibility to find out how the search tool functions. The search boxes of Google Maps and Yandex Maps are for the benefit of the user in that they suggest locations as the user begins to type a word. Yandex Maps can be given a plus for accepting Latin letters, even though the service is in Russian.

It is necessary to notify regarding all three services, that it is not easy to understand how to switch off a tool or a layer once it has been activated. This concerns for instance the search tools or the tools for search of routes; it is not obvious or clear how the search results can be hidden or removed from the map or the left margin once a search has been done. None of the services gives advice on this.

Map design: coloring and signs
The coloring is traditional and standardised in ABmaps and Google Maps especially on the smaller scale levels; tempered and forested areas are marked in green, waters in blue. For a reader who is familiar with traditional paper maps it is hereby easier to codify the contents. The coloring of countries (on smaller scales levels) in a number of pastels is a fairly interesting, and necessarily not very successful choice of Yandex Maps. Firstly, several countries, which are not “related” to one another, are colored the same. Furthermore waters and certain countries have a very similar hue, such as Iran and the Caspian Sea found in Fig. 18, and thus these can be difficult to separate from each other.

Figure 18. It is necessary not very easy to see the difference between waters and land on smaller scales in Yandex Maps. Waters and certain countries have a very similar hue. (21.3.2013)
What is more over faulty, is that Belize and Antarctica are white. This makes at least the (dis)coloring of Belize seem as a mistake or as carelessness. It is not surprising to note that Russia, the home country of Yandex Maps is the only region that does not share its hue with other countries. Nevertheless, the color of Russian does not jump out of picture in any way, but is a calm pale peach. On a whole especially Google Maps contain harmonious colors as well as Yandex Maps does.

Generally speaking all the maps contain fairly traditional, standardised signs on especially smaller scale levels. Cities for instance are symbolized by dots, circles and squares that most often are colored white, black or red. Borders are marked clearly enough in Google Maps and Yandex Maps, and it is easy to separate international and county borders from each other. When it comes to ABmaps it is difficult to separate between borderlines and roads, as can be seen in Fig. 19. This is because the two are both inconsequently drawn and colored.

![Figure 19](image.jpg)

*Figure 19. In certain areas it is very difficult to understand the difference between international borders, county borders, railroads and streams in ABmaps. (21.3.2013)*

In ABmaps international borders are marked in dark blue in Europe, but in large parts of Asia, Africa and South America they are gray. The same gray is utilized for county borders in the USA and in some European countries, such as in France or Spain. To make the situation even worse, also railroads have the same gray tone. The international
borders of South Africa and the USA are drawn in a third blue value, which is not the same as the one utilized in Israel, nor Europe. Because of all this, it is difficult to understand where the borderlines between countries actually lie. Generally speaking it can furthermore be stated that it is unwise to use blue for curvy lines other than rivers, since the hue is traditionally associated with streams. Both ABmaps and Yandex Maps simplify and generalize borders very much in certain regions, such as in the Middle East (this does however not concern the borders of Israel in ABmaps). In ABmaps it seems that borderlines are more or less carelessly drawn, since at times there are several lines to mark one single border, while sometimes the background color and the shoreline do not “match” each other. This applies mainly on the maps with larger scales. An example of this can be seen below in Fig. 20 and 21.

Figures 20. and 21. Carelessly drawn borderlines. At times there are two borderlines in ABmaps, and at times, the shoreline and the border do not “match”. (21.3.2013)
Mistakes or faults like the ones in ABmaps do not concern only the borderlines, but also other features. For instance Al Ghurdaqah is located in the Red Sea, and thus the city that in fact is located on the Egyptian coastline seems to be an island. This is pictured in Fig. 22. It is unequivocal that financial resources always affect the appearance of a map, but carelessness is a thing of its own. In my consideration this is a result of pure carelessness from the cartographer’s or map designer’s part.

![Figure 22. The city Al Ghurdaqah is incorrectly placed in the Red Sea instead of on the shore. (21.3.2013)](image)

As mentioned, ABmaps does not contain any disputed borders or the like. On the contrary, Google Maps and Yandex Maps both contain two kinds of lines for disputed borders. What both services lack however is information on how a dotted line and a dashed line in Google Maps, and a green-yellow line and a second kind of yellow-red line in Yandex Maps, differ from one another. Here a legend would have been very much helpful. Google Maps often provide the user some information on what dispute or episode a dashed or dotted line refers to, which can be regarded as very beneficial. Though, in my opinion this information should be given already on smaller scale levels than now. For the user of Yandex Maps it stays unclear what “episodes” disputed borders refer to.

ABmaps contains a very high, possibly too high number of different road types; altogether there are eleven if also railroads are counted in. The coloring is not the most successful, since it is difficult to see the difference between for instance “Main Roads” and “Highway Roads” which are drawn in a very similar red. On the other hand it must
be stated that the high number of different road types is surely beneficial for some users; generally speaking the contents of ABmaps tell about the service’s pursue to attract drivers above others. For instance the quantity of advertisements that have to do with mobile navigation and route finding tell about this. Moreover interchanges can be found on the map which is fairly exceptional when it comes to so called general maps. The eventual user groups that the map services especially pursue to attract is a topic that I will return to further on.

Also Google Maps can be criticized for its markings of roads, since as noted, they are usually colored orange, yellow or white (depending on the scale) but in Great Britain they are colored orange, blue and green, and in Japan orange and green. The multiple colored roads of Great Britain are displayed in Fig. 23. For a reader who is not familiar with different local mapping standards, this marking can seem very confusing. Moreover blue curvy lines are often associated with streams, as was noted earlier. Again, a legend would have been very useful.

![Figure 23. To imitate local mapping standards, Great Britain contains also blue and green roads above the ordinary orange, yellow and white of Google Maps. The reader may possibly confuse the blue lines with streams. (21.3.2013)](image)
ABmaps contains serious inconsistence in the marking of cities and towns, since only in Israel these stand in line with the legend. All together capital cities can though be found marked as black colored squares and with bolded type (such as Cairo), as small dots (such as Tripoli), or as uncolored squares (such as Baghdad). On the other hand cities that are not capitals (such as Alexandria and Ankara) can be symbolized by uncolored squares in the same way as capitals are. According to the legend, bigger dots refer to cities, while smaller dots refer to smaller cities or villages. Consequently for instance Tripoli with more than a million habitats (CIA The World Factbook 2013) is a small town or a village. The map is hereby very misleading. In Jordan there can furthermore be found purple squares, that the legend gives no explanation on. If the legend applies only for a certain region or country, information on this should absolutely be given. Also in Google Maps there can be found some challenges when codifying signs for cities and capitals. It is impossible to understand which cities are capitals and which are “ordinary cities”, since these are marked in the same way, with a circle and the city’s name. The font size and the size of the circle may in some cases tell about a city’s size, but nothing states that largest cities are the capitals, as can be seen in Fig. 23 that contains a map over northern India. In Yandex Maps the situation is different, since capitals are symbolized with the help of red squares and with a clearly bigger type size than other cities.

![Image of northern India map](image)

**Figure 24.** For instance in northern India it is impossible to know from the map the sizes of the cities or which is the capital. (21.3.2013)
When it comes to the coloring of signs it can be concluded on a general level that sometimes the maps’ hues are very logical (such as green for forests, naval blue for anchors), while sometimes the colors seem to have been chosen randomly (such as pink for hospital areas and brown for university areas in Google Maps, Fig. 25). In both cases it is of greatest importance to provide the reader with further information, since otherwise it is impossible for him to understand what a feature refers to.

Figure 25. In Google Maps all coloring is not logical and predictable. In Helsinki, the capital of Finland, pink areas refer to hospital areas, while brown refer to universities. (21.3.2013)

On a general level it is very essential that the background color is not too bright, but lets the symbols and lettering stand out. When it comes to the design and coloring, as well as to the contents of a map, it is good to keep in mind the saying “less is more” – naturally to a certain extent, since an empty map is of course of no use to anyone. In ABmaps certain places are very (possibly even too) colorful and the map contains such a lot of information, that it is difficult to interpret. From the maps below, Fig. 26 (ABmaps), 27 (Google Maps), and 28 (Yandex Maps) it is possible to see that the map of ABmaps contains such a lot of details and colors that it is more difficult to interpret compared to the maps of Google Maps and Yandex Maps. Thus, before putting something on the map it is crucial to reflect on the information’s importance for the reader. That you have some data does not mean that it should be included in the map; irrelevant information only complicates the design and the interpretation.
Figures 26., 27., and 28. A picturing of Paris in ABmaps, Google Maps and Yandex Maps. The map of ABmaps emphasizes the importance of roads with the help of bright colors, while the coloring is more placid in both Google Maps and Yandex Maps. ABmaps contains much information and is thus perhaps more difficult to interpret. (21.3.2013)
When it comes to topology, all three map services contain occasionally letters that are very small and difficult to read. This concerns mainly larger scales. Here it must although be noted that the capability to read text is naturally very much dependent on the reader’s eyes. In ABmaps the difficulty of interpreting the letters may be caused by lack of anti-aliasing, since especially when the letters have a smaller size, they sometimes seem bristly. In all three services the letters are colored logically (such as blue for waters, brown for heights, black for cities). Different kinds of features are easier to separate from each other thanks to this.

The results that have to do with coloring and signs are summarized in Table 2 to get an overlook of the results. The table describes how consistently or inconsistently borders, roads, cities, toponymy and other signs are marked on the map. The range is 1= inconsistent, 2= fairly inconsistent, 3= fairly consistent and 4= consistent. If there are several different kinds of signs that symbolize for instance a regular international border (as there is in ABmaps), the marking is considered as inconsistent. If all names are on the other hand marked in a similar lettering style (different features may however have different type styles) the toponymy is consistent. Furthermore the table shows if the amount of symbols and colors on the world map is consistent, that is if different regions contain the same amount of information, details and colors.

**Table 2.** *The table describes how consistent the symbols are on the maps, and as well the amount of symbols and colors on the world map. 1=inconsistent, 2=fairly inconsistent, 3=fairly consistent, 4=consistent.*

<table>
<thead>
<tr>
<th></th>
<th>Abmaps</th>
<th>Google Maps</th>
<th>Yandex Maps</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Borders</strong></td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td><strong>Roads</strong></td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td><strong>Cities</strong></td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td><strong>Toponymy</strong></td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td><strong>Amount of symbols on wm</strong></td>
<td>1</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td><strong>Amount of colors on wm</strong></td>
<td>1</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>
**Projection and scale**

A further similarity between the three services is that they all use a projection (Mercator) that distorts the world to a great extent. As can be seen on the maps in Fig. 29-33 for instance Antarctica and Greenland appear as enormous compared to tropic regions.

**Figures 29. and 30.** Greenland and for instance Alaska appear as enormous on the maps of ABmaps and Google Maps, because of the utilized Mercator projection that distorts areal sizes. (21.3.2013)
Figures 31 and 32. Also the size of Antarctica is immense in ABmaps and Google Maps because of the Mercator projection. For a skilled map reader it is doubtless that the relative sizes are distorted, but for an unwitting user is it possibly not that obvious. This makes the utilization of a Mercator questionable. (21.3.2013)
Figure 33. The situation is no better in Yandex Maps; also here the sizes of Greenland, Alaska and Antarctica are huge. (21.3.2013)

One can wonder about the decision to utilize a Mercator, since it is hard to imagine that the maps are intended for instance for sailing, where the angular correctness plays a critical role. Naturally the projection is profitable for Google Maps and Yandex Maps in that it portrays the services’ home countries as relatively larger. This would be a simple solution to why both services use the projection in question. Israel on the other hand is located on lower latitudes, and therefore the home country of ABmaps does not benefit in a similar way. As noted the projection has been in great use in especially Europe, and thus ABmaps perhaps wants to seem as Western as possible by choosing a Mercator. As noted the projection has been criticized a lot, and any map designer should definitely be aware of the distortions that it causes. The grid layer that can be switched on in Yandex Maps is nevertheless beneficial, since it informs to some extent about the distortions caused by the projection. As has been discussed in relation to the zoom levels the map
scale increase/decrease logically in all services. The jumps between the zoom tools the steps between the scales are logical and concise. Especially in ABmaps and Yandex Maps much larger scaled maps are available for certain regions compared to others.

*Maps for the outgoing web user?*

Especially when it comes to larger scales, all three maps can be regarded as cultural feature maps. Maps, that display for instance boundaries and other features with political importance, have traditionally been termed *political maps*. On the other hand the maps of all three services remind at times very much of *tourist or city maps*. The maps contain information that is important for both local citizens as well as for tourists. Especially when it comes to Google Maps, larger cities and cities that for a reason or other attract a higher number of visitors seem as the most well mapped. ABmaps on the other hand is emphatically directed at the population of Israel, and surely for drivers. It is obvious that Yandex Maps attracts mostly Russian users because of the toponymy.

Altogether it moreover seems that the maps are made for persons who are familiar with the Web from before, and who fairly well understand how the Web functions. What would be of greatest importance concerning the users’ probability to codify the map contents correctly is a legend in Google Maps and Yandex Maps. In my consideration it is no explanation that a map contains such a lot of signs that it is impossible to provide a legend. Surely one reason is that Google Maps strives to follow local mapping standards of different countries and thus the number of signs is enormous, but despite this, at least a legend with general information should exist. In both Google Maps and Yandex Maps the links to help and guidance should be more apparent and easy to notice, as should the link to the legend in ABmaps. Furthermore ABmaps should contain some instructions on how to use the service and the tools. From the users point of view a legend or guidance is most beneficial when it can be read while browsing the map. One option could be to provide for instance guidance on a tool in a popup window that opens up as the pointer is placed on the tool in question. Generally a lack of guidance and advice tells that users are expected to be familiar with map services from before. Furthermore it tells about the providers being unobservant to who may use their service, and to what kind of knowledge these persons have.
5.2. Structured content analysis 2: “the Heart of the Middle East”

5.2.1. ABmaps

*The contested borders of Israel*

Even though the border between Israel and Syria is somewhat unclear, it is unquestionable that the Golan Heights belong to Israel according to ABmaps. This can be seen from the map below in Fig. 34.

*Figure 34.* It can clearly be seen that the Golan Heights belong to Israel according to ABmaps. The international border is marked with a blue line, while that between the UN buffer zone and Syria is in gray. (21.3.2013)

It seems that the border between Israel and the UN buffer zone is marked with a clear blue line, and the border between the buffer zone and Syria with a gray line. On the Israeli side of the border (with Golan Heights included), the map contains much information and large scale maps are provided. Immediately on the Syrian side of
border, the map is very poor in both detail and color. Israeli names are utilized in the Golan Heights.

ABmaps pictures the border between Israel and the West Bank with a green line, thus not as an international border, but as the Green Line. The eastern border of the West Bank (to Jordan) is on the other hand marked as a clear blue line. As can be seen in Fig. 35 this gives an impression of the West Bank being a part of Israel, at least on first glance. The amount of information is lesser in the West Bank compared to Israel (except for the Gaza Strip) as Fig. 36 portrays. Security areas A and B are included. ABmaps marks the borders between the Gaza Strip and Israel with a solid black line, thus again not as an international border, but as something else. The border between the Gaza Strip and Egypt is on the other hand marked as a blue line, thus in line with the legend as an international border. The strip as a whole is marked as a security area A. The amount of information and detail is poorer both in the West Bank and in the Gaza Strip compared to areas in Israel, and for instance street maps are rare (Fig. 37 and 38).

**Figure 35.** The borders between Israel and the West Bank or Israel and the Gaza Strip are not marked as international borders. Whole of the Gaza Strip and parts of the West Bank are described as Security areas. The Green Line in very indistinguishable since it drowns in the coloring of the terrain. (21.3.2013)
Figure 36. The fact that Jerusalem is practically divided in two (the western Israeli parts and the eastern Palestinian part) is not recognized on the map of ABmaps. The amount of information is clearly larger on the Israeli side compare to the Palestinian, Security areas. (21.3.2013)

Figure 37. A street map from the Israeli city Gan Yavne, that has a population of 13 000 inhabitants. Street maps are provided from several Israeli cities. (21.3.2013)
When it comes to toponymy, Hebrew or English names are most often utilized in the West Bank. For instance Hebron and Jericho portray this. When it comes to Israel, certain names, usually on larger cities, are in their “international”, English form (such as Jerusalem or Haifa) instead of in Hebrew. In the Gaza Strip names are in their Arabic form. All names are though written in Latin lettering, as noted. Two border crossing points are marked, one in the north at the Israeli border and one in the south at the Egyptian border. Also several junctions can be found.

*The disputed island Cyprus*

As can be seen from Fig. 39 here below, ABmaps does not recognize the fact that Cyprus is practically divided in two. The map is simple and general concerning both contents and design; the only marked features are the country name and six cities. Since all cities are symbolized in the same way, it is impossible for an uninformed reader to know which one is the capital. Greek names are utilized, even in the areas that practically are a part of The Turkish Republic of Northern Cyprus (such as Kyrenia instead of the Turkish Girne). The capital city is termed Nicosia in English.
Figure 39. ABmaps’ most detailed map of Cyprus. The map does not contain much information, and does for instance not recognize the practical division of the island. (21.3.2013.)

The border contest of the Hala’ib Triangle and Bir Tawil

In ABmaps neither the Bir Tawil-dispute nor the Hala’ib Triangle are recognized on scales larger than 500 km; the border between Egypt and Sudan is pictured as a completely straight line (Fig. 40), thus, the Bir Tawil as a part of Sudan and the Hala’ib Triangle as a part of Egypt. The map stands hereby in line with the “Egyptian point of view”.

Figure 40. On larger scale levels contest of neither Bir Tawil nor the Hala’ib Triangle is recognized. The border is marked in line with the Egyptian standpoint. (21.3.2013)
On smaller scale levels, the border then again changes formation and instead of being a straight line, it turns towards northeast at the eastern coast (Fig. 41). The border is thus marked according to the “Sudanese point of view”, the Hala’ib Triangle belongs to Sudan. For other parts, the borders of Egypt are marked as stable, even though the lines are very much generalized and whole of the country poor in detail. Certain city names are in Arabic, while cities that are larger or internationally “more important “are marked in English. The latter contain for instance Cairo, Port Said, Alexandria and Suez.

Figure 41. On smaller scales the Hala’ib Triangle is portrayed as a part of Sudan; thus contradictory to the previous marking that stands in line with the “Egyptian view”. (21.3.2013)

The existence/non-existence of Abkhazia and South Ossetia
Further ABmaps does not recognize the disputed areas of Abkhazia and South Ossetia as can be seen in Fig. 42. Only Georgia is marked. The map of ABmaps does generally not contain much information on the area, simply the country name as well as three cities. Again larger cities are in English (Aleppo, Tbilisi), while smaller in their Georgian form.
Figure 42. ABmaps does not recognize the existence of neither Abkhazia nor South Ossetia. The map of Georgia is very poor in detail and color. (21.3.2013)

Remarks on other areas

Also in the areas of Turkey, Lebanon and Syria the map of ABmaps is very much simplified and generalized, and moreover poor in detail, compared to areas such as for instance Israel or Europe. This is very notable in Fig. 43.

Figure 43. ABmaps’ interest in European areas compared to the interest in its own neighbors is obvious; the map is much more detailed immediately on the European side, while Turkey is considered to be a part of the “uninteresting”. (21.3.2013)

It can be concluded that Turkey, Lebanon, Syria, Georgia and Egypt are all marked with the same amount of color and detail. The background color is gray and a very limited number of cities and lakes are named. There are no roads marked, and furthermore ABmaps does not provide street maps from any of the countries. When it
comes to Turkey, Istanbul is marked in largest letters and with a big black square. Ankara (that is the official capital of the country), is marked with a white square, just like Izmir is. In Lebanon, the capital city Beirut is marked with a small black dot, which according to the legend would refer to Beirut being a small town or village. Jordan on the other hand is marked in more detail compared to the countries mentioned. This is portrayed in Fig. 44. Amman, the capital of Jordan is marked with a big black square, and eight or eleven other cities (depending on the scale) are symbolized by larger purple squares. It is possible to find street maps from all the cities. In the east of the country, not much information in given which possibly reflects the fact that the country is more desert-like eastwards.

Figure 44. Jordan contains more information and colors compared to all other of Israel’s neighbors, but the map is still not as detailed and colorful as the one of Israel. (21.3.2013)

5.2.2. Google Maps

The contested borders of Israel

Google Maps portrays several of the Israeli borders as dashed or dotted, in other words as disputed. In the contested area between Israel and Syria (the Golan Heights) there are several dotted lines. These lines contain the following instructions “1949 Israeli-Syrian-Armistice-Line” (line most to the west, closest to Israel), “DMZ” (refers to demilitarized zone), “Ceasefire lines 1974 UNDOF line “Alpha””, “Ceasefire lines 1974 UNDOF line “Bravo”” (line most to the east, closest to Syria). The last two refer to the UN buffer zone. Pictures of the dotted and dashed lines are found in Fig. 45 and 46 here below.
Figure 45. All borders are marked with dotted lines in the Israel-Golan Heights-Syria- regions in Google Maps. The border between Israel and the West Bank is on the other hand dashed. The amount of information is lesser in the Golan Heights, the West Bank and Syria, compared to that of Israel. (21.3.2013)

Figure 46. Google Maps gives further information on the dotted and dashed lines in “the Heart of the Middle East”. Here for instance the “1949 Israeli-Syrian-Armistice Line” and “DMZ” referring to Demilitarized zone. (21.3.2013)
Thus, according to Google Maps the Golan Heights belong neither to Israel nor to Syria. Eastwards the map becomes less detailed, and Israel is mapped in greatest detail, the Golan Heights somewhat detailed, and Syria with the least details. In the Golan Heights the names are to a great extent the same that can be found in ABmaps. Some minor differences can be found in spelling such a Hispin-Khaspin, Qatsrin-Katsrin (Google Maps-ABmaps). The only name written in Hebrew letters is “Israel” (also in parentheses in English), all other names are written in Latin letters, even though the surrounding countries contain a great number of names written in the official local lettering.

Google Maps marks the border between Israel and the West Bank as a dashed line, and the eastern border between the West Bank and Jordan with a dotted one. To the first of these there is added “1949 Armistice Agreement Line”, and “1994 Treaty Line” to the second one.

Also the border between the Gaza Strip and Israel is dashed and includes “1950 Armistice Agreement Line”. The southern border between the Gaza Strip and Egypt is an ordinary stable line and includes “Palestinian territories”.

The amount on information is less detailed and comprehensive in both the West Bank and the Gaza Strip than it is in most parts of Israel, where it is very detailed (Fig. 47-50). Some towns are marked in the two areas and for instance the existence of a refugee camp is noted in the town of Jibalya. Street maps are rare especially in the Gaza Strip.
Figure 47. It is obvious that the largest amount of information can be found in Israel in comparison with surrounding regions such as the Gaza Strip and the West Bank. (21.3.2013)

Figure 48. In Google Maps the divided nature of Jerusalem is recognized and marked with the help of a dashed line referring to disputed areas. The displayed dashed line is a part of the so called Green Line. (21.3.2013)
Figure 49. Google Maps does not provide an especially detailed map over the Gaza Strip. The largest amount of information can be seen here. (21.3.2013)

Figure 50. On the other hand Google Maps does provide street maps from most Israeli cities. Here pictured is Tel Aviv-Yafo. It is possible to zoom down to even larger scales, all the way down to 100 feet/20 meters. (21.3.2013)
English names are utilized for larger and perhaps internationally more important places (such as Jerusalem and Hebron), while smaller places are marked with their local names. All names are written in Latin letters in Israel, the West Bank, the Gaza Strip and the Golan Heights.

The disputed island Cyprus
Cyprus is pictured commendably well in Google Maps. Below in Fig. 51 is found a map of Cyprus.

![Google Maps of Cyprus](image)

**Figure 51.** Google Maps does recognize that Cyprus is practically divided in a Turkish northern and Greek southern part. Names are marked primarily in Greek but especially in the northern parts also in Turkish and sometimes moreover in English. In the southern part there are no names in Turkish to be found. (21.3.2013)

The border between the northern and the southern part is marked mostly as a dashed line, and the UN buffer zone is pictured between the two. There are a huge number of features on the map and thus it is rich in detail. Both surrounding and inland waters are marked and named. The name “Cyprus” is marked primarily in Greek, secondarily in Turkish and in parentheses in English. Names are primarily marked in the Greek alphabet and the Latin alphabet both in the northern and in the southern parts of the island, though some names may be in only one of the languages. In the northern parts, certain names are marked furthermore in the Turkish alphabet. The toponymy is seen in
Fig. 52. Thus it seems that Google Maps considers Greek as the primary language of Cyprus. The name of the capital Nicosia is found only in its English version and in Latin lettering.

![Map of Cyprus showing the UN buffer zone.](image1)

Figure 52. The UN buffer zone can be seen in the picture. There can though not be found any further information on the line, as there were for instance on the Armistice line between Israel and the West Bank. (21.3.2013)

The border contest of the Hala’ib Triangle and Bir Tawil

Two dashed lines portray the Bir Tawil and Hala’ib Triangle, but there is no further information about the disputes, as there were for instance in relation to the borders between Israel and its surrounding critical territories. A Picturing of the dashed border is found in Fig. 53. Elba National Park is marked on the Egyptian side of the border.

![Map of the Hala’ib Triangle and Bir Tawil border.](image2)

Figure 53. The borders are displayed as contested in the regions Bir Tawil and Hala’ib Triangle. The areas do not belong to neither Egypt nor Sudan in Google Maps. (21.3.2013)
For all other parts, the borders of Egypt are marked as stable. The reader is once again provided a detailed map over the region; the map is especially detailed along the river Nile as can be seen in Fig. 54. A great number of cities, roads and other are marked, and it is possible to find street maps from several cities. Westwards the region becomes more deserted, and thus, there indeed are fewer settlements, built areas and other. Features and places are named and spelled primarily in Arabic but also in English, particularly larger cities.

Figure 54. Especially along the River Nile there are several cities marked, and from these it is possible to find street maps. The western parts of the country are deserted and thereby the map contains less information there. The lettering is both in Arabic and in English, and larger cities are named in English, such as Cairo and Alexandria. (21.3.2013)

The existence/non-existence of Abkhazia and South Ossetia
Abkhazia and South Ossetia are not recognized in Google Maps, but Georgia is marked with stable borders (Fig. 55).
**Figure 55.** Abkhazia and South Ossetia can not be found on the map of Google Maps, but the map of Georgia is detailed and there can be found street maps from several cities. Names are lettered in Georgian and English on smaller scales and mostly in Georgian on larger. (21.3.2013)

The amount of information on Georgia is considerable here as well: roads, national parks, inland waters and much more are symbolized and named. It is possible to find street maps for several cities. Names are marked primarily in Georgian and the Georgian alphabet, and often also in English and the Latin alphabet.

**Remarks on other areas**
To avoid repetition it can be summarized that Google Maps provides very detailed maps from whole of the region termed “the Heart of the Middle East”. Examples of this are found in Fig. 56 and 57. It is possible to find very detailed maps down to street level from almost any location in all of the countries. Names are marked primarily in the countries own languages and alphabets, but also in English and in Latin lettering.
Figure 56. Google Maps provides detailed maps from almost all parts of the studied area; here pictured are parts of Lebanon and Syria and it is possible to scroll all the way down to a scale of 100 feet/20 meters. As can be seen in the picture, toponymy is in local languages. (24.3.2013)

Figure 57. For instance the Turkish city Gaziantep was chosen randomly to investigate how detailed maps Google Maps provide over the studied area. Gaziantep has about 1.5 million habitats. Google Maps provides a very detailed map over the city; it is possible to zoom all the way down to 100 meters/20 meters. (24.3.2013)
5.2.3. Yandex Maps

The contested borders of Israel
Yandex Maps does not provide an especially detailed map over Israel, Jordan, Lebanon, or Syria. The map in largest possible scale can be seen under in Fig. 58. Despite the fairly small scale, it is clear that the border between Israel and Syria is marked according to the “Syrian view”. The border is not marked as disputed or contested, but as an “ordinary”, stable borderline. Thus, the Golan Heights belong to Syria without any questions.

![Yandex Maps Map](image)

Figure 58. Yandex Maps does not provide a map with a larger scale than the pictured over Israel, Jordan or for instance Syria. From this map it is although possibly to see that the Golan Heights is a part of Syria, while the West Bank and the Gaza Strip are independent countries surrounded by international borders. (21.3.2013)

Only one city, el-Quneitra is marked in the area of the Golan Heights. All borders of the West Bank are marked as stable, “ordinary”, international borderlines. Jerusalem is marked with a dot, but it is not named. The only city that can be found in the West Bank is Netanya. Also the borders of Gaza are ordinary international borderlines in Yandex Maps, and there is one road, one railroad, and Gaza City symbolized on the map with the largest possible scale. It can be summarized that both the West Bank and the Gaza Strip are drawn in the same way as independent countries are, as can be seen in Fig. 59. Naturally all borderlines and roads are very much generalized and simplified because of the small scale.
Figure 59. Also from this picture it is easy to see that the West Bank and the Gaza Strip are treated as independent countries in Yandex Maps. (21.3.2013)

The disputed island Cyprus
Yandex Maps does not recognize that Cyprus is practically divided in two. The map does not contain any further information than can be seen in Fig. 60.

Figure 60. Yandex Maps itself does not provide a more detailed map of Cyprus than this. Street maps can be found from Nicosia and Limassol, but they are produced by users, not thoroughly by the service itself. The map above is very simple and poor in information. (21.3.2013)
For Cyprus’ part VGI-street maps are provided from Nicosia and Limassol, but not from the three other cities (Kyrenia, Famagusta and Rizokarpaso) that are marked. The map of Cyprus is fairly poor in detail, and the street maps contain much less information compared to those of Google Maps. The street maps will not be discussed in further detail here, since they are as mentioned produced by the users and not thoroughly by Yandex Maps itself.

The border contest of the Hala’ib Triangle and Bir Tawil
When it comes to the disputed Bir Tawil and Hala’ib Triangle, it can perhaps be considered that Yandex Maps recognizes the contest to some extent. The Hala’ib Triangle is marked as a part of Egypt, since the southern borderline of Egypt is straight. When it comes to the Bir Tawil-area, the borderline makes a hook into Sudan on smaller scale levels while the coloring of the countries do not follow this, but creates a straight line. Thus, according to the borderline, Bir Tawil belongs to Egypt, but according to the background coloring, Bir Tawil is a part of Sudan. On larger scale levels hook remains but the ground color is the same for both countries. Thereby, Bir Tawil belongs to Egypt (and the service stands in line with the Sudanese point of view). The borders of Egypt are marked as stable for all other parts.

Figure 61. On smaller scales the marking of Bir Tawil is contradictory, since the border and the background coloring mismatch. (21.3.2013)
Figure 62. On larger scale levels the Hala’ib Triangle is a part of Egypt, as is Bir Tawil. On the first one Yandex Maps stands thus in line with Egypt, while on the second one with Sudan. (21.3.2013)

The existence/non-existence of Abkhazia and South Ossetia
Yandex Maps is the only of the three services that contains as well Georgia as Abkhazia and South Ossetia on its map (Fig. 63). All borders are marked as stable, and furthermore Abkhazia, Georgia and South Ossetia all have “own” hues on smaller scale levels (Fig. 64). Hereby Abkhazia and South Ossetia are treated as independent countries. In Abkhazia there are two “ordinary” cities (Gagra and Tkvarcheli), and in South Ossetia one (Tskhinvali). Tskhinvali is marked as the capital of South Ossetia. Tbilisi is marked as the capital of Georgia, and furthermore there are six other cities symbolized and named. Also a number of roads and railways can be found, as well as river Kura.
Figures 63. and 64. Both Abkhazia and South Ossetia are treated and displayed as independent countries. This is easy to see from both the map with a larger scale as well as from the one with a smaller scale. (21.3.2013)

Remarks on other areas
Yandex Maps provides maps with a varying scale and amount of detail from the studied area. The map contains a number of cities as well as larger roads and one railroad on largest possible scale for Israel, the West Bank, the Gaza Strip, Jordan, Lebanon, Syria, Georgia, Abkhazia and South Ossetia. All capitals are marked with names and red
squares. For Syria’s part also two rivers are named and symbolized, and some heights are marked in Jordan and Syria.

Egypt and Turkey, and to some extent also Cyprus, are on the other hand pictured in larger scale and in greater amount of detail. In Egypt and Turkey, several cities are marked (as dots and with name), as well as roads, railroads, inland waters and heights. It is possible to find street maps from some cities, for instance from Istanbul, Ankara, and Cairo. Here it must although be noted that the street maps are a part of the VGI-maps drawn by the users, and will because of this not be further considered in this investigation.

5.2.4. Synthesis: Reflections of geopolitics in the study area

The contested borders of Israel
When it comes to geopolitical agendas, the most striking differences between the map services are found in the marking of Israel and the surrounding regions the Golan Heights (and Syria), the West Bank, and the Gaza Strip. The map of ABmaps tells on one hand about a stable, modern and strong Israel, while on the other hand threats, disputes and insecurity are mirrored through for instance the security areas. In ABmaps the visibility and the importance of Israel is highlighted and underlined by marking Israel very colorful and detailed, and the neighboring countries poorly and in gray. A naïve user reads this as “Israel must be of importance, while the other areas must be peripheral”. Perhaps the neighboring countries do not even seem as single countries, but as an impersonal gray mass surrounding Israel. It seems obvious that ABmaps does not have an interest in mapping the closest neighbors of Israel, except for Jordan. There is a great difference in the amount of information and details between Israel and Jordan on one hand, and for instance Egypt, Syria, Lebanon and Turkey on the other. Israel clearly catches the reader’s eye. In ABmaps, the possibility to switch on the ranges of Gaza rockets underlines further the map’s “Israeli point of view”, since that layer functions as a warning map for the population of Israel, emphasizing the threat of the so called “Other”, in this case the Palestinians. The map functions as a national symbol unifying a modern, developed and strong Israel.
It is moreover interesting to note how clearly the West Bank is considered to be a part of Israel; the word “West Bank” can not be found anywhere, but instead it says “Israel” where the West Bank is located. The Green Line that refers to the 1949 Armistice Agreements is as noted, marked in ABmaps as a green line. Especially in certain areas and on larger scales the line drowns very much in the coloring of the terrain. Despite the fact that the line is termed the “Green Line” and even though the line was drawn on a map for the first time with a green colored pencil, there is no reason to mark it in green if it is hard to distinguish that way. The poor visibility of the Green Line gives naturally the reader the impression that the line is of no great importance.

The fact that the entire Gaza Strip and parts of the West Bank are marked as security areas in ABmaps, and that there are refugee camps in the West Bank tell about dispute and insecurity, and from an Israeli point of view it is possible to codify these as “do not go there-areas”. Compared to Palestinian (security) areas and other neighbors Israel is pictured as powerful and modern, which is a strong geopolitical act. It is hard to believe that Israel and Jordan are by accident marked in more detail, while the surrounding countries of Israel are left in the shadow.

When it comes to Google Maps, the borders and territories are drawn in a more neutral manner since they are marked as disputed. Thus Google Maps does not take any parts or make any judgments on whom, territories should belong to. On the other hand Google Maps can be considered to be of greater interest in Israel compared to the neighbors, since the map of Israel contains the largest amount of details. It is fairly interesting that names are spelled in Latin letters all over Israel, the West Bank, the Gaza Strip and also the Golan Heights, considering the fact that a high number of countries have most lettering in their own alphabets (and at times also in English). For the reader it is impossible to find out why this is the case.

Yandex Maps tells nothing about the on-going disputes or instabilities in Israel and its surrounding contested regions, but present the West Bank and the Gaza Strip as sovereign regions. One should keep in mind that there do occur disputed borders in Yandex Maps (e.g. in the Kashmir region), and hereby the cartographers could have chosen to mark the Palestinian borders as such. It is possibly surprising that Yandex Maps does not provide a more detailed map of Syria regarding the fact that Russia (or
the former Soviet Union) and Syria have traditionally been allied. On the other hand the marking of the Golan Heights as a part of Syria is not surprising; the Russians stand in line with Syria rather than Israel. The marking of the Golan Heights as part of Syria can again be read as a geopolitical statement.

Hereby it can be concluded concerning Israel and its border disputes, that ABmaps and Yandex Maps clearly have opposing views on where these territories belong. Both services propagate for their own preferable view, in other words tell different so called national stories.

The disputed island Cyprus
As noted, only Google Maps recognizes the (practically) divided nature of Cyprus. Both Israel and Russia have tended to have closer ties to Greece compared to Turkey, and thereby it is perhaps natural to mark Cyprus as part of Greece. To some extent this can be seen as a geopolitical act, even though the Republic of Cyprus has de jure control over the whole island. Both ABmaps and Yandex Maps stand in line with Greece in the disputes over territory and toponymy. It must however be noted here, that both ABmaps and Yandex Maps provide a very simplified map of Cyprus (much more simplified than those over Greece), and thus, mapping the island does not seem to be of great interest. Google Maps strives presumably to be accurate, neutral and correct by marking the island as divided by the buffer zone, and by spelling names in Greece in the southern part, and in Turkish in the northern. From the reader’s point of view the map of Google Maps is informative and thereby the most usable; it portrays the actual practical situation of the country. The marking of the country in two is on the other hand also a political act, since Google Maps also gives recognition to the Turkish Republic of Northern Cyprus, even though the region is officially, internationally recognized only by Turkey. It is notable that a marking like this, can raise anger in both the northern and the southern population. The actual case displays well how difficult it is for the cartographer and map designer to find a proper balance that satisfies all parties involved.

The border contest of the Hala‘ib Triangle and Bir Tawil
When it comes to the Halai‘ib Triangle and Bir Tawil, it is more difficult to make any clear statements on the map services’ eventual geopolitical aims. As a reminder, neither
Egypt nor Sudan is interested in the Bir Tawil, but claims that the area belongs to the other country. Both countries are on the other hand interested in the Hala’ib Triangle. When it comes to the Triangle, ABmaps stands in line with the Sudanese point of view, and the region belongs to Sudan. However, ABmaps seems here contradictory to its previous “Sudanese view”, since also the Bir Tawil is marked as a part of Sudan, even though the country wants to “get rid of” the area. According to Yandex Maps the Triangle belongs to Egypt. On larger scales also the Bir Tawil is a part of Egypt, while on the smaller ones it is impossible to say which of the countries the region is considered to be a part of. Again, Google Maps provides the most clear and legible map, since the border is marked with a dashed line. What is missing though is information on what dispute the line refers to.

The existence/non-existence of Abkhazia and South Ossetia
Further geopolitical acts can be found in relation to South Ossetia and Abkhazia. Here both ABmaps and Google Maps seem to stand in line with the USA supported Georgia by not recognizing the two regions at all. As mentioned, internationally there are only a few countries that have recognized Abkhazia and South Ossetia, neither Israel nor the USA being of one of those. South Ossetia can not be found when searching for the region in Google Maps, while the search tool suggests “Abkhazia, Georgia” when beginning to type “Abkh..” in the search box. The search result places the user in northwestern Georgia, but despite this neither the term Abkhazia nor South Ossetia can be found on the map of Google Maps (or ABmaps). Yandex Maps on the other hand stands in line with the Russian point of view (which recognizes both Abkhazia and South Ossetia), and marks the two as independent countries with stable, ordinary borders. Also a capital city can be spotted for South Ossetia. The map of Yandex Maps is a strong political act for the independence of the two areas.

Remarks on other areas
As noted, Google Maps is the only one that has a true interest to provide detailed maps over Turkey, Lebanon, Syria, Jordan and Egypt. ABmaps has interest only in Jordan, while Yandex Maps in Egypt and Turkey. Even though the map of Jordan on one hand and those of Egypt and Turkey on the other are better compared to other areas, they are still fairly poor in detail, and Yandex Maps’ street maps are produced on VGI-basis.
One reason to the mapping of Jordan on one hand, and Egypt and Turkey on the other in larger detail can be that these are destinations that Israelis and Russians travel to.

It can be regarded as fairly interesting how clearly especially ABmaps leaves Turkey outside the rest of Europe and portrays Turkey with a minimal amount of information compared to most European regions. The same thing concerns Yandex Maps, even though the difference between Europe and Turkey is not as radical. In my view it is surprising that Yandex Maps does not provide a better map over Turkey, since the service anyway operates and thus clearly has interests in that country. It can however be noted that the Turkish version of Yandex Maps is found at a site of its own, at harita.yandex.com.tr.

**Geopolitical reflections**
A summarized overview of the results can be found in Table 3 below. The table portrays whether the areas are portrayed in detail or not, and whether the marking can be considered as a geopolitical act or not. The range is 1= undetailed and geopolitical marking, 2= undetailed and “ungeopolitical” marking, 3= detailed and geopolitical marking, and 4= detailed “ungeopolitical” marking. ABmaps for instance portrays Cyprus in very poor detail and does not recognize the fact that the island is practically divided in two. Thus number 1, undetailed and geopolitical marking stands for ABmaps’ map of Cyprus. Google Maps does several times contain markings and information on disputed borders, and hereby numbers 3 and 4 describe the map well.

**Table 3.** The table talks about the amount of information on the map, as well as whether the marking can be seen as a geopolitical act or not. 1= undetailed and geopolitical marking, 2= undetailed and “ungeopolitical” marking, 3= detailed and geopolitical marking, and 4= detailed “ungeopolitical” marking.

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<th>Abmaps</th>
<th>Google Maps</th>
<th>Yandex Maps</th>
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<tr>
<td>Israel and borders</td>
<td>3</td>
<td>4</td>
<td>1</td>
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<tr>
<td>Cyprus</td>
<td>1</td>
<td>4</td>
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<td>Hala'ib and Bir Tawil</td>
<td>1</td>
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<td>Abkhazia and South Ossetia</td>
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<td>Other areas</td>
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In my opinion the results show that local geopolitics and interests are mirrored in the investigated maps and that geopolitical interests do affect the appearance of the maps. Such indications can be found in the investigated region, and also in other parts of the world. All map services are obviously interested in mapping their home countries well, and above this Europe seems to be of interest to all three services. Geopolitical interests are for instance portrayed by socio-spatial ties and formations of “us:es” and “others”. “We” are marked in great detail, color and accuracy, while the “other”, that rarely is geographically especially distant, is mapped poorly. Especially the cartographers and map designers of ABmaps and Yandex Maps have created close socio-spatial ties to certain places, above all to Europe.

In my consideration it is clear that the map services are primarily meant for own inhabitants. This applies in particular to ABmaps and Yandex Maps, and can be seen in the pronounced markings of Israel in ABmaps, and for instance in that all lettering is in Russian in Yandex Maps. It can be noted that the “international version” of Yandex Maps (maps.yandex.com) is very much different to the investigated Russian version, and as an example the Golan Heights are not marked as a part of Syria, but described as “Golan Heights and UN Neutral Zone”. It seems that Google Maps strives to be more of a “service for anyone”, compared to ABmaps and Yandex Maps, even though American points of view do affect the appearance of the map. In my opinion Google clearly strives to be the world number one, since it pursues to satisfy users from all around the world. Google Maps provides detailed maps from most areas of the world, and contain for instance a high number of different languages and lettering. Moreover it develops its mapping services considerably rapidly. All web map services seem to strive for credibility and reliability by providing high-tech tools, map page-external services, and more.
6. Discussion

In this chapter the results will be reflected on earlier results in the field of critical cartography, as well as the research questions and hypotheses of this research. I will begin by discussing aspects that have to do with the design and tools, and go on by discussing the critical contents of the maps particularly in the studied area. How geopolitics is mirrored on the maps will be discussed especially in this section. Further in the chapter I will reflect on the consequences of the result.

6.1. Design and tools to promote ourselves

The hypothesis of this research can be proved right in that the web map services do promote or “advertise” the home country in one way or another. When it comes to the coloring and signs, web map services seem to imitate traditional paper maps to a very large extent. This stands in line with earlier research in the field of User Interface Design (Nivala, Brewster, Sarjakoski: 2011: 379). What is naturally new compared to paper maps, are the interactive tools and functions that can be added to web maps. Both earlier investigations of web map services and the results of this thesis show that users are provided with several different kinds of tools and functions that make it possible for him/her to interact with the map and decide what his/her map is like. The investigated maps do contain several tools as was seen, but the tools can be considered as fairly “modest”, in that above all they help the user to browse the map. None of the services offer a possibility to for instance change the coloring or symbols, and by that radically affect the design of the map. In the future this is possibly something that will change, since much of the current GIS software is light years ahead the web map services when it comes to tools and functions. The noted fact that cartography is changing from a supply-driven to a demand-driven field, will surely affect the user’s possibilities to edit the map.

According to earlier research (Nivala, Brewster, Sarjakoski: 2011: 379) users appreciate for instance harmonious coloring and that tools are easy to notice and use. Advertisements are on the other hand not welcome, and furthermore help and guidance should be easy to reach. Also the results of this research confirmed these facts: the reader is least distracted by map external signs or functions when reading the discreet Google Maps. It is as noted very essential that help, guidance and legends are available
to ease the map reading. This research confirms moreover how essential it is that a
provided legend applies to the whole map, or that if it does not, the reader is informed
of this. Especially Google Maps and also Yandex Maps have obviously seized the
opportunity to include an uncountable number of different kinds of signs on the map.
The burden of this is though that it has been impossible to provide a legend. Some
researchers suggest that designing web maps is more difficult compared to paper maps,
because of the uncountable number of visual options to choose among (Artimo 1994:
46; Nivala, Brewster, Sarjakoski: 2011: 379). In Google Maps the uncountable number
of different signs becomes a challenge since the service has decided to imitate local
mapping standards. It can hereby be notified that it is not for the profit of the user to try
to satisfy him to a too large extent.

Other researchers consider that the design process is easier nowadays, thanks to several
published guidelines (Zhang 2007: 143; Bernhard, Helen, Räber 2008: 31–32). This is
surely true, but this investigation shows that when it comes to web map service, they
also seem to imitate each other, and above all those that have been and are successful.
In other words, smaller providers of web map services walk in the footsteps of larger
when it comes to design and tools. This can be seen in the similarity of the three
investigated web map services, above all in the page structures as well as the tools that
are remarkably similar. The fact that smaller providers imitate the larger ones has both
its pros and cons. For the user, the design and the tools are familiar from before, and
therefore the service and maps of a newcomer may be easier to use and read. On the
other hand, nothing has to state that design and tools provided by a giant are the best,
and thus it can be dangerous to apply such without critical consideration.

All three services remind at times very much of tourist or city maps. In my
consideration the maps contain information that is important for both local citizens as
well as for tourists. Earlier it was noted that GI-systems have been criticized for
containing simply information that is crucial for the elite and powerful. Possibly this
statement applies to the investigated services, since symbols of hotels, museums,
embassies, zoos, Starbucks-cafeterias, shopping centers, roads, local beaches and other
are common. These play naturally an important role for the ones with money. In certain
parts of the world, such as in the Middle East or in Russia, it is a fact that large parts of
the population lack access to the World Wide Web, and thus web maps are naturally
designed for persons that are better off. In my consideration the investigated maps are
made for modern, outgoing people who want to explore the own country and also the 
(perhaps mainly Western) world. As noted, one can read between the lines that the users 
are expected to be familiar with web map services to a greater or lesser extent.

6.2. Critical contents

When it comes to portraying the “own country” the results of this research stand very 
much in line with earlier research in the field of critical cartography. Research has 
found that maps are ethnocentric, and place the “own country” in focus (Harley 2001, 
Monmonier 1996, Black 1997). These facts are apparent also on the investigated maps, 
and thus despite a great potential that web maps offer, they seem to walk in the 
footsteps of the traditional paper maps. One of the hypotheses of this research was that 
also other areas are well-mapped to attract a large amount of users and advertisers, and 
thereby have revenues. It was expected that especially popular destinations and the 
regions of allies are rich in detail, as well as regions with a resembling cultural identity. 
All services provide maps of Europe that are rich in detail. This is perhaps not 
surprising considering the fact that Europe is a popular destination, and that the home 
countries of the web map services have important ties to Europe in several ways. The 
hypothesis can further be considered as true in that also the USA is fairly well mapped 
in ABmaps, while Yandex Maps provides fairly poor maps from this part of the world. 
The investigated maps confirm that history and heritage can be seen in reflections of 
“our territory” and “your territory”. Hereby it is evident that territories are created and 
produced; they do not exist as such.

The investigation of Collins-Kreiner (2008: 265–266) has shown that Israeli maps tend 
to exclude Palestinian boundaries and ignore place names and settlements that are 
politically contentious. Israeli territories and place names are on the other hand 
emphasized. The same thing applies vice versa on Palestinian maps. According to 
Harley (2001: 99, 153), this is a kind of “cultural genocide”, since the existence of a 
whole ethnic identity can be erased and denied. These are of the strongest statements 
found on the investigated maps. Above all, the Palestinian areas are excluded in 
ABmaps, while both ABmaps and Google maps deny the existence of Abkhazia and 
South Ossetia. This is surely a result of the local geopolitical agendas and interests.
Moreover it surely has to do with the fact that the map providers want to show Israelis the Israeli perspective, the Americans the American and so on. The research of Ormeling (2007: 105–115) has proved that “an American multimedia product meant for the American market will show the world from an American perspective... The product will be focused on those aspects that Americans are thought to be interested in...”.

Earlier research (Tuathail 1999: 17) has raised a question on what quality borders, boundaries and territories, and the geopolitics practiced in relation to these, nowadays have as there are turbulent financial flows, instantaneous telecommunications and for instance transnational dangers. It is appropriate to emphasize that according to the investigated maps, territories and boundaries are highly critical and play very important roles. The borders and territories underline the local national myths, ideologies and interests.

In the hypotheses of this research it was supposed that the web maps do not want to discomfort the reader by giving pictures of an unstable world or contain ambiguities and give assumptions that the cartographers would not know what the world looks like. This hypothesis applies for Yandex Maps, but not for ABmaps or Google Maps. ABmaps pictures strong messages of (national) threat by containing security areas, while Google Maps pictures both instability and ambiguities by containing disputed borders and territories. It can be noted that the fact that Google Maps gives further information on what episodes the dashed and dotted lines refer to, raises the service’s credibility at least in my eyes, instead of the opposite.

Considering the results of the investigation it seems clear that the maps of web map services carry on the tradition of paper maps. As we have seen, local geopolitical agendas, interests and stories do affect the design and contents, and it is evident that the geopolitical and other misleading mapping techniques have continued from paper to cyber space. As Harley (2001) has stated and shown, local geopolitics, interests and world views affected the design and contents of maps as early as in the Medieval. Even though the map production as a method and process has changed very much since those times, the results of for instance Harley (2001), Black (1997) and Monmonier (1996) and this research show that the purpose of maps has not. Both traditional paper maps and the more modern web maps do mirror local knowledge and national myths and stories since maps have intensions and purposes.
A further hypothesis was that the geopolitical agendas are well hidden and difficult to notice on the investigated maps. On some points this is false, while on others true. Concerning for instance the marking of Israel and its surrounding regions, the agendas of ABmaps and Yandex Maps are very evident. In Google Maps they are on the other hand not. The service seems to not take any parts since borders and territories as portrayed as disputed. What can be seen from the un-existence of Abkhazia and South-Ossetia is though, that Google Maps portrays only disputes that exists in the American way of thinking; the one concerning Abkhazia and South-Ossetia does not, but these regions are unambiguously seen as a part of Georgia. On a general level it can be notified that texts such as “No data available” or “No results found” easily hide the fact that “we did not consider this regions as important enough to be pictured on the map” or “we did not want to picture this area”.

It is essential to note that it is not straightforward or easy to know, when something is left out from the map or marked in minor detail by purpose. At times one may possibly even consider that the more pronounced an error is, the more likely it is caused by carelessness than actual distortion. This is since maps with large faults are generally speaking of no benefit at least as for instance route or tourist maps; in other words for purposes that the investigated maps may be used. There has been an amount of debate on when critical investigation of maps is drawn too far, in other words, when has the researcher made too radical conclusions on a map’s distortions? Especially the methods, ideas and findings of Harley have been debated and criticized by a number of cartographers, such as Kosonen (2000), Monmonier (1996), Pickles (2004), and Andrews (2001). It has been stated that Harley draws too radical conclusions concerning for instance the power structures inherited in maps. I myself, and also the critics of Harley do agree on his note that maps are related to power, and that maps are affected by the society in which they are produced. It is furthermore true, as Harley states, that cartographers do have power over readers. But, as other cartographers, and even Harley himself (?) have noted, it is not this simple. A map is never an accurate mirror of the “real world”, but that does not automatically make all maps manipulative. Maps are distorted pictures of the Earth yes, but they do not necessary intentionally pursue to mislead the reader. To consider that every part of a map is misleading is simplistic and too radical. Hereby one must be careful and reflective in the statements on geopolitical messages hidden in maps.
6.3. The increasing power of web maps

What does all this then mean in a larger context and for the everyday users of web map services? Along with the continuing expansion of the Web and the Web 2.0 the audience and web map users are growing in number. It is well known that maps are read through the Web to a growing extent. Thus, maps become more powerful than before, and they affect and produce people’s world views more and more. Naturally it is essential to remember that different web map services are utilized in different parts of the world; Google Maps may be a number one in many European countries and the USA, but the case is surely different in for instance Russia or other Asian countries. As research has noted, also the results of this research show that the users are more and more taken into the process of making maps and evaluating their design and usability. This is naturally a good thing, but on the other hand it also has its cons. When the user is a part of the map making process he considers it as ever more reliable. On the other hand it is always the provider who decides what is pictured on the map. Thus, the faults and distortions that the map contains are still better hidden and forgotten.

It is interesting to reflect on how the Web as a medium affects the reliability of maps and how their critical contents are interpreted. As the results showed, the providers have by far the power to decide what and how regions are displayed. I can not help but wonder, whether web cartographers have larger opportunities to choose what they want to include in their map, how they want to color it and so on, compared to the traditional paper cartographers? Is it that the Web as a medium offers such large possibilities to create visual representations that you can expect to find almost whatever, while the paper maps have to be stricter and stick to the traditional standards? Moreover I wonder if the nature of the Web makes it easier for the cartographer to disclaim their responsibility for the correctness of their maps and other products? Compared to web maps, I have never seen paper maps, or especially atlases, that would describe the world in as an unequal way as those of ABmaps and Yandex Maps do. The production of web maps compared to paper maps is as noted much faster, easier, shorter, comfortable, and less expensive compared to paper maps (presumed that you have the map data), but this does not give the cartographer the right to be careless. Unfortunately the results of this research seem to indicate that the quality of the maps is necessarily not as good on web
maps as it is on paper maps. Hasty drawn lines are “excused” by providing high tech tools or other.

6.4. The everyday user needs growing awareness and attentiveness

The results of the research can be considered as very important, since web map services are used by a huge and growing number of people from all around the world. As many regard maps as accurate without questioning their contents, maps have an enormous power in creating and modifying the world view of anyone. Considering the results of the investigation it is reasonable to ask if the user should ever trust a map.

As has been noted, a reliable map should inform the reader about its distortions and fallible. None of the investigated maps seem to be legibly critical of themselves, but gives the reader the impression that the map is an accurate, impartial picture of the world. For the reader this is naturally very questionable, since he/she does necessarily not automatically question the contents of the map or reflect on how the map may be misleading. So, what can then be done to prevent people from forming incorrect views of the world? An easy answer would be nothing, since the web map services are private companies and have the right to provide users with whatever they want. Harley (2001: 204–205) suggests that since distortion is inevitable on maps we should quit talking about maps as images of the world, but instead term them “simulacrums that redescribe reality”. According to Harley this would invoke a more open, selfcritical, socially sensitive approach to both the making of maps and maps themselves. In my opinion this is a very appropriate suggestion.

The most important thing is to raise people’s awareness in cartography on a general level. Maps are not going to disappear anywhere, quite the opposite. As the World Wide Web catches on, people that possibly have never seen maps before gain access to use them. Hereby the importance of legends also becomes evident. Considering all this the results of this research are crucial not only to the scientific field (that possibly has the responsibility to raise the cartographic knowledge and awareness) but to anyone.
7. Conclusion

This research has investigated how local geopolitics is mirrored on the maps of web map services. By analysing three web maps services from different parts of the world (ABmaps from Israel, Google Maps from the USA, and Yandex Maps from Russia) the aim was to find out if, and if yes, then how the local world views, and national interests and myths are mirrored and portrayed in web map services. The chosen maps were investigated through two structural content analyses, the first one concentrating on the design and tools of the maps, and the second focusing on the critical contents of a certain studied area termed “the Heart of the Middle East”. The maps were approached with the help of semiotics, hermeneutics, iconography and deconstruction. The studied area was as noted termed “the Heart of the Middle East” referring to its geographical location. Several contested territories and borders exist in the region.

The research was successful in that all the research questions got answered. The hypotheses were proved to be true, except for one. These will be discussed further down. Regarding the design and tools of the maps, the results show that web map services follow traditional cartographic standards to a fairly great extent. This concerns especially the coloring as well as the signs for borders, roads and cities. What could be concluded was however that there is serious inconsistence in the marking of for instance cities in ABmaps, and also in Google Maps. When it comes to the designs, tools, page structures, and projections, the three investigated web map services are similar. A suggested explanation to this was that smaller services walk in the footsteps of the larger and the successful. Along with earlier research it was notified that it is very essential for web map services to provide legends as well as help and guidance.

Especially the map of ABmaps and also that of Yandex Maps treat different parts of the world very unequally; the most detailed maps of ABmaps portray Israel and Europe, while Yandex Maps’ picture Russia and Europe. Google on the other hand portrays the world in a more consistent way. All three web map services portray their own home country in a profitable way. Thus it can be concluded that the services are to a greater or lesser extent ethnocentric and do contain national statements on geopolitics. These findings stand in line with earlier critical cartographic research.
Geopolitical acts were found especially in relation to the contested borders of Israel. ABmaps strives to picture Israel as large as possible, thus for instance including the Golan Heights inside the borders of Israel. Yandex is clearly contradictory to this, since the Golan Heights belong to Syria according to the map service, and both the West Bank and the Gaza Strip are independent countries. Both ABmaps and Yandex Maps are poor or fairly poor in detail and information when it comes to Cyprus, Egypt, Jordan, Syria, Lebanon and Turkey. Neither contains detailed information on Georgia, but in contradiction to both ABmaps and Google Maps, Yandex Maps does portray Abkhazia and South Ossetia as independent countries. Hereby it is evident that the map services agree on and stand in line with the geopolitical thinking of their home countries.

Altogether it was stated that the web map services, especially ABmaps and Yandex Maps strive to attract users from their home countries above others. Google Maps on the other hand seems to strive to satisfy users from all around the world and to be a clear world number one. It was perhaps slightly surprising to notice how clearly ABmaps makes a difference between the own country and Europe on one hand, and large parts of the rest of the world on the other. This was something unexpected, since the hypothesis was that the services strive to attract as much users as possible and thereby to satisfy as many as possible.

Since there has been a very limited amount of research on web map services and especially on their critical contents, there are several possible topics and issues that future research can and should investigate. To begin with it must be noted that the web maps can be, and are updated and edited continuously, and hereby it would be interesting to find out how the contents of the web map services have changed in for instance a year or two. The field develops extremely rapidly and new innovations affect the web maps. Naturally, it is important to investigate also other web map services, and how these perhaps distort the world and are affected by geopolitical thinking. Another truly interesting research question is how much people tend to rely on the information of web map services. This is something that surely is much dependent on a user’s cartographic and geographic knowledge.
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