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To document the undocumentable: Photography in the scientific practice of physical anthropology and race biology

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Abstract

Purpose – The purpose of this paper is to see how the disciplines of physical anthropology and race biology used photographs as documenting tools when trying to prove the existence of variations among the human species dependent on race. On a more general level the study aims to contribute to the discussions on how images work as documents in scientific practice.

Design/methodology/approach – The primary methodology of this study is a functional and rhetorical analysis of the photographic material taken by the Swedish State Institute of Racial Biology between 1922 and 1958.

Findings – How images work as documents in scientific practice depends on what kind of documents they are, and what practices they take part in.

Originality/value – By showing how images played an important and substantial role in the research practices of physical anthropology and race biology, this paper stresses the importance of taking images as serious influences in scientific practice. The authors stress the need for further investigations into how images work as documents in scientific contexts.

Keywords Classification, History, Communication, Documentation, Documents, Audiovisual media

Paper type Research paper

Introduction

Aim, material and method

The establishment of the physical anthropology discipline in the nineteenth century coincided with the launching of new image reproduction methods, such as lithography, wood engraving and photography. Photography became an especially important tool in the research practice of the discipline from the end of the nineteenth century and forward – especially when physical anthropology merged into newly established research areas, such as race biology and eugenics. In this paper I will look into how the disciplines of physical anthropology and race biology used this new pictorial technique as a documenting tool when trying to prove the existence of variations among the human species dependent on race. By showing how photographs were used within these disciplines I also aim to contribute to the discussion on how images work as documents in scientific practices on a more general level.

Since disciplines like physical anthropology and race biology were established early in Sweden, with several renowned researchers active from 1850 to 1980, a fairly large body of pictorial material was produced within Sweden. From the beginning of the twentieth century, photographs were often used in the research of the race biology discipline and several photographical archives remain from this work. The Swedish State Institute for Racial Biology (SIRB) (1921-1958) collected and produced vast pictorial material; today the Uppsala University library holds photographic archive material from the institute with over 12,000 photographs compiled in folders and albums. The institute also produced

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publications richly illustrated with photographs. Some of the more important publications published by the institute were *The Swedish Nation in Word and Picture* from 1921, *The Racial Characters of the Swedish Nation* from 1926 and *Svensk raskunskap (Swedish Race Science)* from 1927, and together with the photographs from the archive, the illustrations from these publications will be used as the main empirical material in this study.

The material will be analysed from a functional and rhetorical perspective to see how the pictures were used in scientific practice, what they brought to the research process, and how they met the demands of the scientific community. Important questions in relation to this overarching purpose are the following:

- How were the pictorial materials used in the research processes?
- How could the photographs be used as scientifically reliable data?
- How did they meet the requirements of objectivity in scientific practice?

Before entering the next section, some ethical considerations must be addressed. Many of these photographs were produced under humiliating circumstances, and the ethics of re-publishing them can be question, since the act once again puts these people, portrayed in the material, in a degrading position. I decided that the urgency to discuss this dark chapter of European scientific history overshadowed this concern. However, I have avoided publishing more degrading pictures of children or of people who might still be alive.

Theoretical aspects and previous research

This study relies on understanding scientific pictures as theory loaded, bringing epistemological assumptions to light. Scientific pictures not only give us knowledge about the nature they represent, as a reflection of reality, but also of the knowledge situation creating them, i.e. the knower and the collective way of knowing in that specific situation (Daston and Galison, 2007, p. 53). This collective way of knowing is perceived as historically determined, and on a more general level this study connects to the ideas presented in Foucault's (1994) *The Order of Things*, stating that different historical periods are characterized by different epistemological presumptions, epistemes, permeating every act and understanding in the scientific practice of the period.

Even if emphasizing the fact that pictures are theory loaded it is also important to underline the fact that they are less conventional than words. They do have other capacities than words when representing the natural world. Peirce (1940, p. 115) stressed this difference of words and pictures by dividing the signs in three main different categories: index, symbols and icons, where the icon and index have a clear relation to reality while the symbol, i.e. the word, is altogether arbitrary. The unique relation of images to reality is also expressed by Berger (1972) when he states that: "No other kind of relic or text from the past can offer such a direct testimony about the world which surrounded other people at other times. In this respect images are more precise and richer than literature" (p. 10). And when Barthes (2003) examines the ontology of photographs and their relation to reality he pinpoints that they, apart from communicating a conventional layer of understanding, also carry messages without codes, i.e. they give us an unmediated access to reality in a way that no other media does (p. 120).

But, as stated, even if the aim of the pictures is to say something about nature, they also say something about the scientific context they are a part of and the epistemological assumptions permeating this context. Kemp (1990), for instance, states that images in the scientific context show "a complex interaction of prior knowledge,

automatic expectations, illustrative technique, emotional context and the given framework of verbal information" (p. 128).

Thus, images can be seen as documents that need to be analysed and decoded in the same way verbal expressions are treated. The statement that images can be documents or are documents is hardly controversial. The Belgian scholar and father of the field of documentation, Paul Otlet (1903/1990), in the beginning of the twentieth century claimed that "maps, plans, charts, schemas, ideograms, diagrams, original or reproductions of drawings, and photographs" were documents (p. 86). Also the idea of the image or the visual as text has been prevalent for some time, at least since McKenzie (1986/1999, p. 13) presented his broad definition of the concept of text and included verbal, visual, oral and numerical data into this concept. And with Lund's (2012, p. 743) definition of documents as "any results of human efforts to tell, instruct, demonstrate, teach or produce a play, in short to document, by using some means in some way", it appears as a challenge not to define an image as a document, i.e. an artefact able to produce knowledge or meaning.

In saying that, it is also important to recognize the long history resistance to giving images the status of knowledge-producing artefacts. This resistance can, according to Latour, partly be blamed on our iconoclastic culture. Both in religion and science the fear of images has not only prevented images from being used, but also led to the destruction and banishment of images. Since images are human-made, they have not been seen as signs of divinity nor are they interpreted as objective and reliable tools in scientific work (Latour, 2002). Later in the text I will return to this discussion on the objectivity of scientific images.

Another argument against using images as scientific documents has been the idea of images as aesthetic pieces and as expressions of emotions; only verbal and numeric expressions have been associated with the production and documentation of scientific knowledge and rational reasoning. According to Topper (1996), who in several studies has investigated the role of images in the practice of the natural sciences, the Western world has created in a cognitive hierarchy, with senses and visuality at the bottom and verbal abstract reasoning and logic on the top (p. 218). Mitchell puts forth a similar interpretation when referring to a common, persistent narrative in Western culture, stating that it was verbal language that made humans human, while pictures have been "the medium of the subhuman, the savage, the 'dumb' animal, the child, the women, the masses" (Mitchell, 1994, pp. 24). A consequence has been that pictures in the history of science, for long, was not seriously analysed as scientific, knowledge-producing tools and documents. When scientific pictures were noticed, they were analysed as aesthetic expressions from an art history perspective, and as such, denied of their scientific contexts and functions. Smith (2006) concludes (when commenting on the visual culture surrounding Charles Darwin) that "if historians of science tended to ignore the visual, art historians tended to pay little attention to the textual. […] Illustrations were lifted out of their contexts, with no attention to the science they were illustrating" (p. 33).

The status of images as documents and tools in the scientific practice is, as mentioned, now generally accepted. Today we can find examples of studies that address the role of images in the scientific context, discussing what an image brings to the research process and how, and, not least, what images contribute that words do not in the research process (Hall, 1996; Topper, 1996).

What can then be said about how a scientific picture works and acts in scientific practices? The idea that a good scientific image is a realistic image has, for good reasons, been questioned. Hall (1996, pp. 3-39) has, for instance, shown, that a more schematic picture often serves the scientific purpose more efficiently, since a naturalistic

representation tends to capture all aspects of the object depicted, even the insignificant ones, while a schematic picture pinpoints the central and the significant – and that is what science in general wants to discuss. Rudwick (1985) takes a similar standpoint when he states that schematic pictorial language actually can be evidence of the maturity of a discipline. When a discipline has evolved and developed shared scientific goals and methods, it also tends to produce a joint visual rhetoric governing what to look at and what to emphasize in a picture. A further consequence of this reasoning is that different disciplines tend to use and develop image rhetoric in various ways, and they also tend to make use of new image techniques in different ways. When photographs, for instance, were introduced into the market as a reliable reproduction method – rapid and efficient – many disciplines, like botany and medicine, avoided them, since the schematized rhetoric required in the scientific context was not fulfilled with this new technique; the camera did not had the ability to highlight what was important and exclude non-significant aspects in the same way as hand-drawn illustrations. Topper explains:

> […] the artist still has a role to play in illustration, for the camera captures an individual specimen (the particular) whereas an artist can depict the archetype. This is one reason why naturalist-artists, after the ascent of photography, were still employed for illustrating natural history and anatomy (Topper, 1996, p. 234).

But other disciplines, anthropology, for instance, embraced the new technique. Pinney (2012, pp. 14-15) explains how quickly photography was recognized as a vital tool in the newly established field of anthropology. When conducting field trips to collect data about the diversity of the world's people, verbal descriptions were considered to be unreliable, observations lacking in methodological meticulousness, but the camera was seen as a producer of reliable raw data. The new media did not just seem objective and, thus, scientifically reliable; photography was also very efficient since it could capture humans fairly quickly when compared to earlier illustrating methods.

So depending on where, in what kind of discipline, and when, different approaches and attitudes to the pictorial media can be discerned. Not only if images were used differed, but also how they were used. Sometimes they were used as mere illustrations to what was written in the text, other times as raw empirical data (Kemp, 2006). In the next section of this paper we will look into how the camera was used in the context of the SIRB and what it brought to the research process of the institute.

Swedish physical anthropology – working objects, standards and visuality

The purpose of SIRB was to survey and classify the Swedish population according to race. The data collected – measurements and estimations of bodily traits, social and demographic data and photographs were intended to create a foundation for a rational population policy aiming at improving the Nordic (Swedish) race. This race was deemed superior in comparison to the other races living in Sweden – primarily the East Baltic (Finnish) and the Lappish (Sami) race, but was, due to miscegenation and a depraved urban lifestyle, under threat and needed to be. The project was politically well anchored; there was a general agreement among all political parties, both the left and the right wing, on the necessity of preventing this degeneration of the Nordic race, and the Swedish government generously financed the project (Lundborg, 1922, pp. 10-14).

Working objects and standards

As a discipline race biology can be described as a mixture of physical anthropology and medicine – where physical anthropology met the newly discovered Mendelian laws

(in the beginning of the twentieth century) not only the external physiological parts of human bodies but also genetics became of interest to the race scientists (Lundborg and Runnström, 1921, p. 46). But Mendelism was just slowly adapted, as late as 1941 the head of the institute at that time, Gunnar Dahlberg writes: "Mendelism had spread slowly among anthropologists and all implications of it have not yet been taken into account" (Dahlberg, 1941, p. 33). So even if genetics generated interest, it was still the external aspects that created the starting point for the examinations conducted by the institute; bodies, and the looks of bodies, were the working objects of the discipline and proved what race a person belonged to[1].

To categorize humans based on how they look was nothing new; here the institute had a long tradition to rely on. Long before the institute was established Carl Linnaeus (1707-1778), with his ambition not only to classify plants, animals and minerals but also the varieties of the human species, used a system based on how people looked. He used primarily skin and hair colours when organizing the humans into the following categories: Americanus/red, Europaeus/white, Asiaticus/yellow and Afer/black. Johann Friedrich Blumenbach (1752-1840), often declared as the father of anthropology, was clearly inspired by Linnaeus but added yet another category and formulated his famous race classifying system (also in use today) with five races: the Caucasian white race, the Mongolian yellow race, the Malayan or brown race, the Ethiopian or black race, the American or red race. Some years later the Swedish anatomist Anders Retzius (1796-1860) launched a system of dividing the human species into different races by calculating the size of craniums according to his famous cephalic index, the ratio of the maximum width of the head, multiplied by 100, divided by its maximum length (Lundborg and Runnström, 1921, p. 26). Retzius differentiated between long skulls (dolichocephalic) and short skulls (brachycephalic) where the former was perceived as a long, blond, blue eyed and progressive Nordic racial type, while the former were of a black, tiny and less progressive type. During the nineteenth century several new race classification systems were launched, many with the ambition to differentiate Europeans into several categories, harmonizing the newly established nation-state building. Instead of one white race, as in the system of Linnaeus and Blumenbach, the American race scientist William Ripley operated with three different white races, and Joseph Deniker, a French anthropologist, elaborated using a classification scheme with six main and four secondary European races (Ripley, 1900, p. 597).

When SIRB in the 1920s put their scientific race theories into practice, they worked with a race classification system inspired by these former systems, using Retzius' cephalic index and more modern differentiated systems, and they came up with six different racial types:

(1) Persons having light eye colour and light head hair, with a stature over 168 cm, and a cephalic index under 78, have been designated purer Nordic type.

(2) Those having light eye colour and light head hair, with a stature under 173 cm, and a cephalic index between 80 and 85, have been designated purer East Baltic type.

(3) The remaining persons with light eye colour and light head hair have been designated light mixed types […].

(4) Those having light eye colour and brown head hair, and those having a dark eye colour and light head hair, have been designated medium dark types […].

(5) Those having dark eye colour and brown head hair, or light eye colour and dark head hair, have been designated dark mixed types.

(6) Those having both dark eye colour and dark head hair have been designated dark types (Linders and Lundborg, 1926, p. 151).

What we actually see in this standard is three pure races – the Nordic, The East Baltic and the Lapps – and three that are mixed race types. To identify the mixed types was especially important since they were believed to cause miscegenation and racial degeneration (Lundborg, 1919b, pp. 142-143). What we also see in this quotation is how the external, physiognomic aspects are taken as a point of departure for this categorization practice – a point that I soon will return to, but first a comment on this need for standardization.

Since many people of different professions and from different research areas took part in the race biology research project, it was important to establish a rigid and stable racial standard. Lundborg, the head of the institute, describes the interdisciplinary character of the work; it included researchers from several different disciplines, including anthropology, genetics, physiognomy and statistics (Lundborg, 1922, p. 16). He also declared that not only different disciplines but also different nations took part in the research and shared and communicated research data and methods. When deciding what data to register and how, the Swedish institute was, for instance, clearly inspired by fellows from Germany (Figure 1)[2].

A prerequisite for this sharing was standardized tools and procedures, or as Bowker and Star (2000) put it, "standards are deployed in making things work together over distanced and heterogeneous metrics" (p. 14). Shared methods and standards are also evidence of the maturity of a discipline, and when it came to measurements, calculation and estimations of bodily characters, SIRB worked with standardized procedures and instructions for what to register and how. Their research results, published in, for instance, *The Racial Characters of the Swedish Nation* (1926), show table after table with meticulously registered standardized research data: height and width of the head, length of trunk, legs and arms, length of stature, profile of nose, colour of hair and

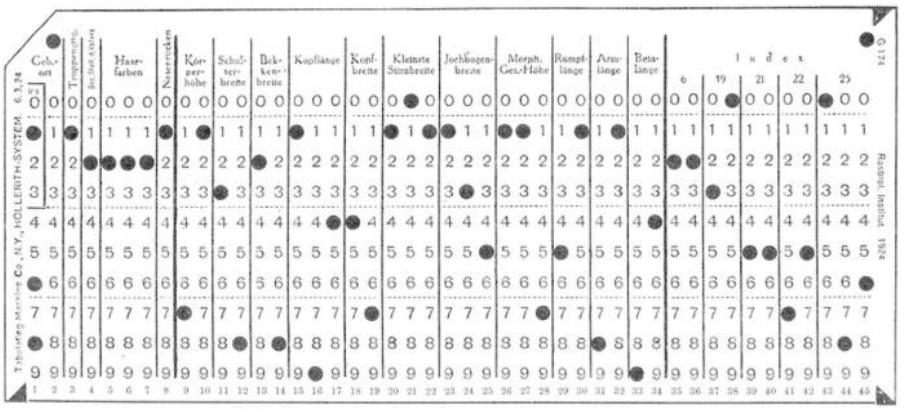

Figure 1.
Nordic race, East Baltic Race and Lappish Race

Sources: Linders and Lundborg (1926, p. 12). Reproduced courtesy of the Uppsala University library

eyes, and so on. But as mentioned, the SIRB also uses a lot of photographic material in the research process, and the next section will present how this material was produced and used.

Visualizing race

The race standard, as mentioned above, focused on biological and physiological aspects of human beings – bodily characters were the working objects in the scientific practice involving race. And it was with the help of observation, i.e. the sight and the gaze, that the institute were supposed to differentiate, sort and classify – in the most meticulously and detailed way – the physiognomy of all humans within the borders of the Swedish nation according to this set standard. With this focus on the external and observable aspects of the human body, the work of the institute closely follows the tradition from Linnaeus and Blumenbach, and can, with reference to Foucault, be said to be placed in a classical epistemic tradition with observation, identification, differentiation and ordering as core operations and concepts. In this classical tradition seeing and identifying by seeing significant external aspects of the objects under investigation, was of utter importance: "To observe, then, is to be content with seeing – with seeing a few things systematically" (Foucault, 1994, p. 134). It was by being seen that the world could be grasped, described and shared in a proper and stable scientific way.

At the same time it was the inner qualities – intellectual capacity, moral, genotype, etc. – that Lundborg and his peers wanted to grasp by making external observations (Lundborg, 1934). It was these qualities that would guarantee the Nordic race its superior position. This (new scientific) interest for inner functions and qualities increased generally during the period, not only in the race sciences, but in natural sciences on the whole. According to Foucault a new episteme – the modern – was established during the nineteenth century, where inner essential functions of humans and animals (instead of external appearances) became the point of departure when identifying species and the relations of them in the order of nature (Foucault, 1994, p. 231). The gaze was still important but the goal was now: "[t]o relate the visible to the invisible, to its deeper cause" (Foucault, 1994, p. 229).

These inner aspects were, however, not yet accessible with the methods at hand, at least not with the methods used by the institute. They were still trying to differentiate the races with the help of measurements and visual examinations and estimations, and not by genetic analysis or such. Dahlberg (1941, p. 33), the successor to Lundborg, also criticized, as mentioned above, these shortcomings of the anthropological method of the institute, and claimed that they had a very limited understanding of the latest scientific achievements on heredity, genes and laws of inheritance developed after the rediscovery of Mendelism.

With this lack of theoretical understanding and of appropriate methods, it was still the phenotype and the looks of people that mattered to the institute when conducting their investigations. And with this focus on external traits, and the visual and observable aspects of the human body, it is not surprising that the institute found the camera useful (Kjellman, 2013). The camera could not only rapidly produce a vast amount of photographical records but was also, in this period, deemed objective and reliable – capturing the world just as it was. The photographs were believed to, if produced with scientific restrictions and ambitions, "standardize modes of representations as well as amass a large number of observations" (Joschke, 2014, p. 281). And the photographs were not just believed to create knowledge in the scientific process, i.e. by producing data, but also to transmit a controlled spread of knowledge in order to create an informed public (Pinney, 2012, pp. 14-16).

To produce the visual material, the institute employed several photographers and bought expensive camera equipment (Broberg, 1995, pp. 11-19). And during research journeys out in the country they produced, alongside charts with social and demographic data and bodily measurements, thousands of photographs As mentioned above, the photographic archive of the institute consists of over 12,000 photographs. And Sweden was not unique in its ambition to document the citizens according to race criteria. Examples of other extensive, government-supported projects, also making use of the new photographic technique, were, for instance, the Anthropometric and Racial Committee of the British Association for the Advancement of Science, who compiled physical data and photographs of British citizens, and in USA, The Eugenic Record Office, with the aim to preserve America's racial standard and counteract the hereditary ills afflicting American society (Maxwell, 2010, pp. 97-112).

But how could those race criteria be captured in scientific and reliable ways? How could the race characteristics and standards, the working objects, set by the race scientists, be captured in the pictorial material? It is one thing to set a race standard with measurements and words, as shown above, but another to define and expose it visually. One important characteristic of photography is, as mentioned, that it captures all there is, and not only what is significant. The viewer gets everything, even aspects that are not within the standard. This is in contrast to the act of describing a person with words or figures, where you decide what to highlight and what to leave out. Another consequence is that photographs capture uniquely embodied individuals, not general types, and they tend to do it in diverse ways, conditions that actually impede the scientific goal of producing comparable data of general types, or as Daston and Galison (2007) explain it; when photography entered into science the objective view of science met the assymetrical individuality of photography (pp. 11-16). So what race science in general – not only within the Swedish institute had to solve was how to capture the race signifying characters and general and standardized "racial types" with the camera, and, in doing this, produce stable and comparable pictorial data.

Race significance

Different solutions were explored when trying to capture what was typical and signifying for a race type. John Lamprey presented one popular example in an article in the *Journal of Ethnological Society of London* in 1869, where he tried to reduce insignificant aspects in the photographs and make pictorial data more reliable. In his example he stripped the subjects of all context and clothes; only naked bodies were shown. He also used a grid system, a chequered background combined with a stick in the photographs, to better measure and compare the subjects (Plate 1). Both calculations and comparisons of data were facilitated by this method[3].

Even if they certainly were aware of the grid system, the Swedish institute never used it. But they sure had ambition to produce scientifically reliable photographs; they gave lectures to the staff in photography (Broberg, 1995, p. 15) and they expressed ideas of race biological photographs to be taken *en face*, profile and semi-profile (Broberg, 1988, pp. 194-195) (Plate 2). This way to produce photographs was employed by many physical anthropologists, but was first developed within anthropometry/criminology; Alphonse Bertillon made use of the method to measure bodies for identification purposes of criminals (Wilder, 2009, p. 88).

But when looking into the photographic material in the archive, it is clear that this formula was not always followed. Instead we see great variation in the ways photographs were taken; a set standard seems far away (Plates 3 and 4).

Sources: Photographed by John Lamprey, C. (1868-1869). © RAI

Plate 1.
Ternate, Malagasy male, at 25; full face; full length

Sources: Photograph from the SIRB archive. Reproduced courtesy of the Uppsala University library

Plate 2.
Photograph taken according to the instructions from the institute

Plate 3.
Three different "race" types (Lappish, Swedish, Finnish)

Sources: Photograph from the SIRB archive. Reproduced courtesy of the Uppsala University library

Plate 4.
Outside a settlement in the north of Sweden

Sources: Photograph from the SIRB archive. Reproduced courtesy of the Uppsala University library

One explanation for this diversity is that many of the photographs collected in the archive were not produced by photographers employed by the institute but sent in by the public. Two years before the opening of the institute, Herman Lundborg and some of his anthropological colleagues launched *The Population Types Exhibition*, with the purpose of instructing the Swedish citizens about the racial characteristics of the nation. In a call to the public they asked for portraits taken according to race biology principles – *en face*, profile and semi-profile (Broberg, 1988, pp. 194-195). A lot of pictures were sent in, many of them not in accordance with the instructions of the institute but still displayed in the exhibition. These pictures made up a substantial part of the photographic material in the archive later on, and they were also reproduced in the earlier publications of the institute. Striking in many of these pictures is the absence of biology and bodies; only a few them documented biological traits. The bodies are mostly concealed or disguised behind clothes, props and other accessories; other more social and contextual aspects are instead highlighted. When browsing through the material it is clear how these contextual aspects were used to promote the idea of the superior Nordic racial type and the inferior mixed and darker racial types. The Nordic types are always well dressed and placed in prosperous surroundings, while other more inferior racial types often stand outside poor settlements, wearing shabby clothes (Plate 4). The material produced is far from objective scientific data; on the contrary, these are clearly biased by the race biology ideology.

This way to treat the image material, with no agreed-upon formula and no set standard, was not a problem unique to the research conducted by the SIRB. On the contrary, the institute followed a practice typical in early anthropological research in general, with "myriad practices, standards, and contexts of distribution" (Joschke, 2014, p. 281). This can be seen as an expression of the immaturity of the discipline. However, with time we can see a development, where the mug-shot formula becomes more and more common, excluding contextual and environmental aspects. The last publications from the institute only show pictures according to this *en face*/profile formula, reduced of all contexts. This development was, for certain, a way of meeting scientific demands. Wilder (2009) concludes that eugenic portraits in general showed this development since they needed to be "subjected to rigourous scientific standards" (p. 92), to turn into reliable specimens, specimens that could take part in the scientific work in reliable way. And to pass as a scientifically reliable and mature discipline, was particularly important for the race science and eugenics community, since their research results were supposed to inform political decisions on population policies.

But at the same time it is clear that even if the institute put this formula into practice, the material still is biased and permeated by ideological beliefs on race, even if not as strikingly as in the earlier material. How the subjects confront the camera and how the studio light is used varies depending on who is portrayed. The Swedish girl and the Finnish girl below represented the Nordic type and the East Baltic type, respectively, in *Svensk raskunskap* in 1927, and it is clear that the photographs have been taken in totally different manners, and thus signal different things to the viewer (Plates 5 and 6). Why were the research biases not acknowledged or even noticed?

An answer to this question might be found in the ontology of photography. Even if today we can agree on the fact that photographs are documents that need to be interpreted in relation to their contexts, i.e. that they have symbolic and linguistic codes that need to be interpreted in relation to a discursive practice, they are also, at the same time – using Barthes' words – "messages without a code" (2003, p. 119). They relate to

Sources: Photograph from the SIRB archive. Reproduced courtesy of the Uppsala University library

Plate 5.
Nordic female

reality more directly than words and other pictorial techniques. This fact tends to make us believe in the truthfulness of photographs: "the absence of a code clearly reinforces the myth of the photographic 'naturalness': the scene is there, captured mechanically, not humanly (the mechanical is here a guarantee of objectivity)" (Barthes, 2003, p. 120). In science in general this was perceived as something of great importance when arguing for the reliability of the camera. Daston and Galison (1992) have shown how nineteenth century physiologist "turned to mechanically produced images to eliminate suspect mediation" (p. 81). The aura of naturalness and objectivity can thus be used to conceal the fact that the photographs also bring meaning, i.e. coded and symbolic messages, and not simply reality. This was something Lundborg and his colleagues could use when presenting photographic portraits of different races; loaded with a pictorial rhetoric producing the superiority of the Nordic race and the inferiority of darker races, they could claim they just showed reality as it was, since this was what the photographs showed.

When discussing the ambition of capturing the race significant characters in the photographs one more example from the archive must be mentioned. Among all 12,000 photographs in the archive a few x-ray pictures of sculls and hands are present. They are a rare exception in the vast collection, but are interesting just because of that. The Cephalic

Sources: Linders and Lundborg (1926, plate XXIV). Reproduced courtesy of the Uppsala University library

Plate 6.
East Baltic female

index mentioned above, developed by Retzius in the end of the nineteenth century, aiming at divide the population in short and long sculls with references to the height and width of the head, was used by the institute when defining the race types. A ratio under 78 defined the Nordic type while the east Baltic type had a ratio between 80 and 85 (see the quotation p. x). The x-ray images of sculls in the collection clearly refer to the idea of the cephalic indexing (n. b. the lines drawn on the photograph, Plate 8). With the ambition to examine and race-categorize a large part of the population, using x-ray images and measurements to capture the cephalic index seems like a rational practice, but the method was not put into use. Presumably because the pictures did not express, in the same way as the other photographs, what the institute wanted to communicate as significant (Plate 7).

Selecting the race type

We have so far discussed how race science strived for more scientifically reliable photography by reducing insignificant aspects and setting a standard formula for the portraits taken, but they also had to deal with the fact that the camera captured unique items/persons and not general types – the latter of which science asked for. Francis Galton presented one solution to this problem at the end of the1700s when he developed the photographic composite method. The idea was to re-photograph portraits of members of the same group on the same photographic plate to get the general type

Plate 7.
X-ray from Photograph from the SIRB archive

Source: Reproduced courtesy of the Uppsala University library

of one race or one social group (Galton, 1879). By doing this he could produce a portrait of the "criminal type", the "typical Jew" and other types of the time. SIRB did not produce composite photographs but tried other methods. One way to make the photographs into the general types was to designate one person as typical for one group, and it was this method that was put into practice by the SIRB. From the large stock of photographs the head of the department Herman Lundborg decided which portrait/person should represent each racial type. In the preface of *The Racial Characters of the Swedish Nation,* the editors state that, "(t)he photographs illustrating anthropological types in the plates at the end of this work, have been selected by (Lundborg) from the Institute's large collection, which today contains several thousand photographs" (Linders and Lundborg, 1926, pp. IX-X).

When browsing through the material it is striking how often young, healthy people represent the Nordic race type, while elderly, shabby, smaller people often represented races deemed inferior (Plate 8). Today this approach to science may not be perceived as accurate and objective, it is quite easy to see that the selection was biased by ideological presumptions. But if we consider the scientific conditions in the 1920s, a different view of what is objective and not appears. Daston and Galison (2007) have for instance shown in their studies on scientific atlases, how different views of what is scientific and not have affected the way pictorial material has been treated. According to Daston and Galison (2007) illustrated scientific atlases can be defined as "those select collections of images that identify a discipline's most significant objects of inquiry", and they "set standards for how phenomena are to be seen and depicted" (pp. 17, 19) within the discipline. The scientific atlases decide "what is worth looking at, how it looks, and perhaps most important of all, how it should be looked at" (Daston and Galison, 2007, p. 23). How the atlases use images to represent empirical objects, i.e. how they use the image techniques available, and what pictorial rhetoric they put into practice, depends on epistemological assumptions, assumptions that have varied throughout history. Before 1860, naturalists and atlas makers defended the idea of truth to nature. They selected the most typical or the archetypical examples of the object under study and

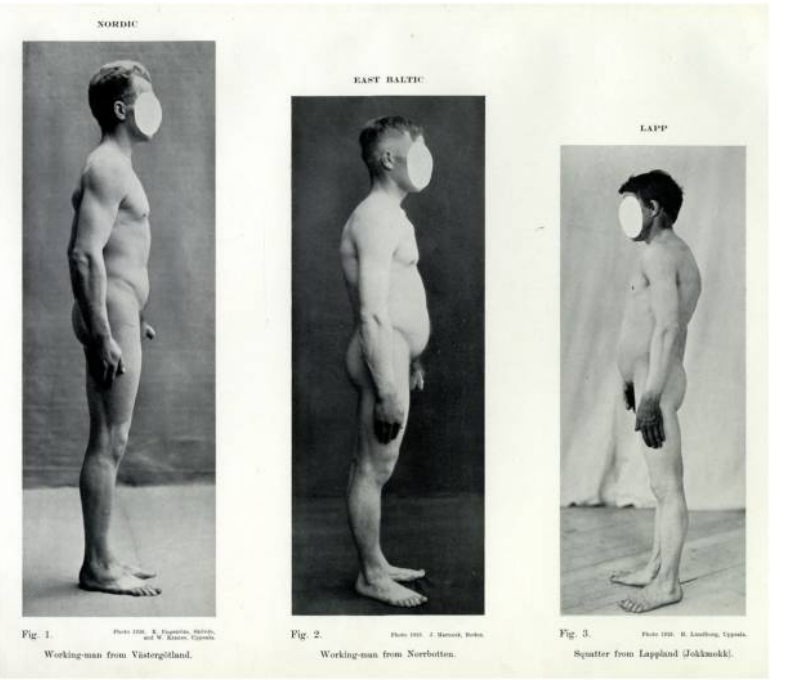

Plate 8.
Nordic Race, East Baltic Race and Lappish Race

Sources: Linders and Lundborg (1926, plate XLI). Reproduced courtesy of the Uppsala University library

perfected the image to truly represent the general and ideal model of the object. But in the mid-nineteenth century this practice was questioned as too subjective; instead an objective view was desired, with as little intervention as possible from scientists and atlas makers in the image-making process. This new approach aimed at an automatism that in many ways made photography a preferred medium. The drawbacks with the objective view and the use of photography were soon to be recognized. Since photographs tend to, as mentioned, capture all there is, including the incidental and the insignificant, the pictures failed to represent what was typical of the categories they were meant to represent. With this development the rationale of the atlases (using photographs) was put at risk; they did not provide the scientific community with representations of the working objects as general types. The scientific community presented two different solutions to this problem: one that abolished images altogether and another that abandoned objectivity in favour of trained judgement. The latter promoted the idea of the expert who could rely on his or her unconscious intuition to pick out and depict the perfect example of the working objects. This way to treat the material was not considered to be non-objective but just another kind of objectivity (Daston and Galison, 2007, pp. 45-46).

With this idea of trained judgement and the belief in the role of the expert, the fact that Lundborg picked from a large stock of photographs the pictures that best suited the scientific situation was not regarded as a threat to scientific objectivity. On the contrary, with his authority as a trained researcher he was trusted to make these choices, to decide on a representation of the working objects of the discipline.

Conclusion

When scientific practices define, describe and standardize their working objects, be those plants, animals, chemical structures or anything else, they have traditionally put verbal or mathematical descriptions into practice – as presented above. But, as mentioned, with new pictorial methods entering the market in the twentieth century, it became more and more common to try to also make use of the new technique in the scientific community, especially within the race science.

In this paper I have tried to answer how pictorial material and the new photographic technique were used as documents in race science practice and the research process of the Swedish State Institute of Race Biology. The first important aspect identified was that they used photographs extensively; the archive consists of over 12,000 photographs, and the publications were also richly illustrated with photographs. This extensive use of photography testifies to the trust in the new technique. In addition, the photographs apparently had positive implications for the research process; the camera could rapidly produce a large amount of research data, data that, also rapidly, could be distributed and communicated to the public. The photographs also had an air of truthfulness and reliability; they were not produced by an artist, mediating the objects with his pencil, as drawings were. On the contrary, photographs were perceived as mere projections of reality, and they brought something unique to the scientific process, which drawings, texts or mere calculations could not.

But the new technique also had its drawbacks. Unlike the draughtsmen, whom could choose the important aspects of an object when creating an illustration, the camera captured it all, even insignificant aspects of an object. To make photography reliable they needed to find methods to reduce what was insignificant, and we can see a development within race science that reduced aspects such as context and clothing, those aspects that disguised what was significant for race science: bodies (the working objects of the discipline). In the early material it is clear how this redundant information in the pictures – clothes, settings, props - was used to steer the interpretation of the material in a specific direction, to prove that people of Nordic race types were healthier, more good-looking, of better class and therefore lived in more prosperous housing than the more inferior, darker types. Within time, this treatment of the material was abandoned, and in later publications the portraits follow a more strict formula. But looking more closely at this material, it is still clearly biased, now by using more sophisticated methods, such as posing and lighting. The reason why they still could use this practice without criticism can partly be explained by the trust in the camera as objective.

Another drawback with the camera was the fact that it always depicted individuals, not general types, or typical objects, which was what science asked for. Because of this, photographs were often either avoided or manipulated to fit scientific practices. The SIRB's way of dealing with the problem was selection; they picked from a stock of photographs those portraits they deemed relevant as examples of one group. With a view of objectivity, where the expertise and the trained judgment of the scientist guaranteed the reliability of this process, the selections were supposed to take place without any biasing prejudices. The fact that the Nordic types always were represented by young, healthy, good-looking people while darker races were represented by elderly, shabby-looking men, were therefore, in those days, seen as evidence of the superiority of some races and the inferiority of others, and not, as we see today, a token of the ideological presumptions of the scientists.

This clear need to manipulate the photographic material in the scientific practice of SIRB can be explained by the idea that they tried to prove something improvable – the existence of variation of the human species dependent on race. Today most scientists deny the existence of multiple human races; the differentiations within a group or population tend to be much greater than those between groups, and no bodily aspect can be taken as proof of racial affinity. But the race scientists in the eighteenth and nineteenth centuries tried hard to prove that racial variations among the human species existed, and when they could not prove it with their scientific instruments and methods they found other solutions. Stephen Jay Gould (1996) has shown in *The Mismeasure of Man*, how racial science constantly biased research data to prove the superiority of the white race and the inferiority of the black. In this circumstance, the SIRB is no exception; by using photography to document race differentiation they actually tried to document something undocumentable, i.e. that race differentiation existed and that the Nordic race was superior to other races. And when trying to prove something false, they had to select, manipulate and distort the photographs.

Another reason for this need of manipulation was the fact that the camera captured external aspects while the institute wanted to grasp and document inner aspects and qualities. Because of this they tried to make the photographs to say something more, to connote qualities beneath the surface of the image, i.e. to document what actually was undocumentable with the methods in use. This will of capturing inner aspects of organisms was well in line with the development of the natural sciences in general and new scientific methods such as gene analysis, blood analysis, IQ-tests etc., can be seen as an offspring of this new development. The institute however, under the governance of Lundborg, still held on to methods of the classical observation and, because of this, displayed an ambiguity in the use of the camera: on one hand the fixation on external aspects of bodies and what can be seen, on the other hand, a will to capture something more, some hidden aspects. These hidden aspects – moral excellence, genetic supremacy, high intellectual capacity – were instead connoted by letting not explicitly significant aspects slip into the picture frame.

So the trust in the camera, and the belief in the expertise, gave the institute room for manoeuvre, a room they could use to steer the interpretation of the pictorial material (i.e. to bias it) in a direction that promoted and supported their prejudiced ideas of the racial hierarchy of the human species.

A conclusion drawn from this study on how pictorial materials are used as documents and research tools in a scientific practice is that they are adjusted to specific scientific practices. Different practices make different uses of the technologies at hand. To understand how pictures work as documents, empirical studies of different practices need to be conducted. Even if we today agree on the fact that pictures work as documents and information tools in different knowledge-producing contexts, they are still under-investigated document types.

Notes

1. In the early time of anthropology there was conflict in the discipline over whether race was cultural, i.e. dependent on context, or whether the biological aspects, i.e. bodies, should be studied and captured by the camera. When physical anthropology merged into race biology and eugenics, the biological aspects outweighed the former. It was the inherited and biological characteristics that were of interest when describing and classifying people into categories of race. For a thorough discussion on the subject see Pinney (2012).

2. In *The Racial Characteristics of the Swedish Nation*, 1926 (p. 8) Lundborg declares that the cards, where data of the person examined should be registered, were designed "to conform on the whole with the directions given in MARTINS's Lerbuch". Martin was a German researcher from the field of physical anthropology.
3. A similar approach was taken by E. William Marshall (1873) in his *A Phrenologist amongst Todas,* London: Longman Green & Co.

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