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RESEARCH ARTICLE

“We are all cousins.” Belgian ancestry and genomic testing in a close-knit community in Northeastern Wisconsin

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Drawing on an ethnography of Wisconsin-based descendants of Belgian immigrants, this article explores social dynamics relating to ways lay users of genomic ancestry testing (GAT) understand genomic ancestry and how their understanding raises questions concerning the construction of their identities. The study focuses on a group that presents interesting features for which the existing literature is sparse (i.e. a rather secure Belgian ancestry/present identity, the absence of a clear ascription to the category “Belgium/Belgian” from the tests, and a biological connectedness in the Belgian community). GAT is approached as a socio-cultural object contextualized at a local level. The analysis involves specifying the discursive practices by which individuals entangle with this knowledge, following a two-pronged perspective derived from the nature of the information received by users, which is both individuating/deindividuating and deterministic/probabilistic. The paper, therefore, provides new insights into the manners in which social actors trigger their responsibility in response to genomic ancestry, and this questions the users’ sense of identity.

Keywords: Genomic ancestry testing; Belgian ancestry; science and popular culture; ethnographic study; close-knit community and genomics

1. Introduction

In the United States, the practice of genomic ancestry testing (GAT) is pervasive and has been increasingly commented upon since the mid-2000. According to available estimates, the number of users could be anywhere between 25 and 100 million (Stankus 2020). Insightful and variegated literature on how GAT users

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make sense of the test has appeared during the past 15 years (e.g. Nelson 2008; Tallbear 2013; Nash 2004; 2015; Scully, Brown, King (2013; 2016); Sommer (2012); Strand and Källén (2021); Watt and Kowal (2019); Roth *et al.* 2020). Despite these efforts, scholarly research has in a broad sense primarily focused on the risks of essentialism stemming from the interpretation of the test results and the population categories circulated (Walajahi, Wilson, and Hull 2019). This has left undocumented intriguing dynamics in which users make sense of the data discovered. Based on an ethnographic case study of Wisconsin-based descendants of Belgian immigrants, this article asks how the members of this largely white, rural, still ethnically cohesive group interpret and make sense of the test results they are presented with. In order to do so, I move away from generalized assessments and instead use an ethnographic case study approach to better capture the kind of knowledge users employ to frame and interpret their test results in a particular context. Based on both sociological and anthropological perspectives, I explore this practice as a socio-cultural object embedded in everyday life and set in contexts at local levels. I focus on the actors' points of view of their own actions of *practicing* genomic knowledge.

While this approach could focus on any group of GAT users, the group chosen for this case study presents interesting features that have received little scholarly attention. To begin with, this case study provides an opportunity to examine GAT's practices inside a group in which long-lasting community affiliations exist. Research remains scarce when it comes to empirically examining the experience of receiving and interpreting GAT results (Shim, Rab Alam, and Aouizerat 2018, 47). Research is even more limited when it comes to using ethnographic methods to study the practice of GAT within an ethnic group (Barth 1969) where networks of inter-knowledge and common ancestry are established. This Belgian community has preserved a strong individual and collective identification with this ethnic category for over 170 years (Tinkler 2019). I have studied elsewhere (Romijn, forthcoming) how the members of this group, secure in their Belgian ancestry, negotiate genomic ancestry relevance as a means to support ancestry claims when this ancestry is previously well-known and socially validated. Furthermore, the study of how users from this community relate to the category "Belgian/Belgium" when this category is largely absent from most tests is of interest. There are no clear genomic signatures for "Belgian descent," which instead significantly overlaps with German, Dutch, or French. In this article, I also explore another important specificity of this case study which is the types of biosocialities (Rabinow 1996) at play in the group. Until recently, this was a close-knit community in which two individuals identifying with Belgian ancestry in the region would have a very high chance of finding common relatives since most Belgian ancestors intermarried between the 1850s and the 1950s. This situation leads users of GAT to discover from the company's online website "biological cousins" they may recognize prior to the test based on their surname.

I propose to examine how GAT users in this community relate to the population categories circulated in their DNA results (mostly purchased from 23andMe and Ancestry.com), as well as their connections to biological cousins while considering the three aforementioned features of this group: a rather secure Belgian ancestry/present identity, the absence of a clear ascription to the category “Belgium/Belgian” from the tests, and a biological connectedness within the Belgian community. In so doing, I wish to highlight the interpretation and social impact of GAT in the context of this group, in conjunction with the epistemic weight of the results received. To this end, the analytical objective of this article involves specifying the discursive practices by which individuals interpret GAT results and GAT technologies altogether, following a two-pronged perspective derived from the nature of this information, which is both individuating/deindividuating and deterministic/probabilistic. In other words, this article explores little-studied yet characteristic features pertaining to the interpretation of ancestry DNA results in this community, while taking into account, from an analytical perspective, the nature of this information.

In the second section, I discuss some of the research taking place at the interface of science studies and ancestry genomics. I also outline my analytical approach to further explore how users make sense of DNA results. In the third section, I present my case study and methods. The fourth section is devoted to the ethnography and the discussion of collected data. Firstly, I discuss aspects of how members of this Belgian community position themselves in relation to the science behind genomic ancestry and their relative interest in understanding how population categories are processed by GAT companies. Secondly, I explore how population categories are appreciated. I highlight how GAT users expect to find hints connecting them to their Belgian ancestry when there is, in fact, no clear genomic marker for it. I also show users’ reactions when facing results refined over time. Thirdly, I question the type of collectives that are being inferred from DNA results and how these are used to process the identity of test users. I question users’ stance when they consider their genetic makeup is increasingly mixed over generations, and when they stress a “Belgian purity” and the biological connectedness with people of Belgian heritage in the region when it is reminded through DNA results. Finally, I conclude with some thoughts on how users from this Belgian community make sense of genomic ancestry information from the point of view of the logics of individuating/deindividuating and deterministic/probabilistic.

2. The hybrid nature of DNA ancestry and users’ interpretations of results

One of the most scrutinized issues pertaining to the development of scientific, commercial, and lay-user practices of genomics has been how population categories circulated in different fields involving genomics (i.e. genomic medicine, genetics of populations, epidemiology, pharmacogenomics, public health

prevention practices) has contributed to what has been called the “molecularization of race” (Abu El Haj 2007 ; Fullwiley 2008) or “genomic racialization” (Fujimura and Rajagopalan 2020). Science and technology studies have examined the ambivalence of geneticists regarding the role of racial taxonomies (Bliss 2011; Fujimara and Rajagopalan 2011; Lee 2009; M’charek 2005) and investigated the ways differences between groups are approached (Fujimara and Rajagopalan 2011; Outram and Ellison 2006; Shanawani *et al.* 2006). Such research offers insights into the logic of power emergence when genomic knowledge is produced and emphasizes that science is never isolated from “the prevailing cultural value-system of its time, and specific historical and political trajectories” (M’charek, Schramm, and Skinner 2014, 460). In line with this perspective, studies on GAT have, to a large extent, focused on the issue of circulating an essentialist approach to identity stemming from the combination of two elements. On one hand, scientific information is usually perceived as “objective and authoritative” (Roth *et al.* 2020, 1) –which is particularly true with genomics due to the complexity of this science. On the other hand, the references made to population categories are usually not circulated as the “product of historical, political, economic, and social factors, but instead [as] naturally occurring divisions within the human species that can be quantified” (Walajahi, Wilson, and Hull 2019, 1744). In the last 15 years, the ever-growing number of research articles on the practice of GAT has pointed to a recurrent observation: it is not only uncommon that the use of GAT causes individuals to radically reshape their narrative identity (Abel and Schroeder 2020) but the likelihood of an essentialist understanding of identity based on DNA results is not increased relative to a constructivist perspective (Roth *et al.* 2020; Strand and Källén 2021). The developing cultural role of genetic ancestry testing has been examined through a rich and variegated literature based on qualitative approaches (e.g. Nelson 2008; Tallbear 2013; Scully, Brown, King (2013, 2016); Sommer (2012); Strand and Källén (2021); Watt and Kowal (2019)). However, empirical studies on the experience of users are not numerous, particularly when it comes to exploring GAT practices in relatively cohesive communities characterized by shared ancestry and long-lasting community affiliations. In these cases, genomic ancestry testing may reveal unknown biological connections with individuals known prior to the test, either by sight or by name. Several articles have raised the issue, but few explore empirically the modes of sociability being reconfigured or impacted by the practice of GAT. As Anne-Marie Kramer puts it, “genetic genealogy constructs new stranger/intimate relationships, where every other human “individual” has the capacity to become a related other.” (Kramer 2015, 84). This aspect will be explored in the present article.

Additionally, while research constantly refines the understanding of the dynamics of lay interpretation of GAT and the narratives that go along with the practice, research remains scarce when it comes to putting into perspective users’ interpretation of their DNA results with respect to genomic ancestry’s

specific nature. In this article, I wish to explore how lay users make sense of their DNA results while bearing in mind both the singular context of practicing GAT in a close-knit community self-identifying to a Belgian ancestry and the very nature of ancestry DNA. GAT users are said to be put in relation with the “past,” “origins,” or “ancestors” and “genetic genealogy is portrayed as having extraordinary epistemological possibilities” (Strand and Källén 2021, 535). In light of this, it is important to appreciate that this past unfolds in a variety of forms. Which past is, therefore, made available? Depending on the methods used, the statistical indicators chosen, and the population referenced—in short, all specific parameters of GAT technologies and their social impacts in terms of providing new narrative tools for understanding human pasts—the window on the past differs greatly. Depending on the techniques of ancestry genomic analysis used (e.g. autosomal DNA, Y-chromosome, or mitochondrial DNA to mention only the most usually cited), the relationship between one user’s DNA and his/her ancestry varies. “DTC DNA testing can be used to resolve some of these genealogical puzzles within the last 100–200 years, and optimally provides information on the biogeographic origins of families well beyond those timelines, sometimes over thirty thousand years during the times of the advance and retreat of major glaciers in the Northern hemisphere” (Stankus 2020, 232). The analysis of mitochondrial DNA or Y-chromosome provides access to a window on ancestry which is located further back in the past, also known as the “deep past” (Booth 2018). It should, nevertheless, be reminded that methods and technologies for analyzing DNA “can access only a fraction of one’s entire ancestral lineage” (Blanchard *et al.* 2017, 170). Regardless of the analytical parameters used, the window on the past made available to GAT customers is always fragmentary. These parameters, such as the choices of molecular markers targeted, the tools chosen for summarizing how these markers are interpreted (e.g. statistical indicators, infographics), or the ways of putting into perspective one molecular marker with one reference population, are varied. Many limitations have been thoroughly discussed elsewhere (see Stankus (2020); Blanchard *et al.* (2017); Perego *et al.* (2019); Bobkowski, Watson, and Aromona (2020), and Booth (2018) for recent clarifications and further developments). For my part, I wish to explore how users process their identity based on their GAT results, while reflecting on the specificities of this information, which is hybrid in nature.

Genomic ancestry, especially direct-to-consumer GAT, situates an individual in relation to several collectives. While DNA is said to be bound to a unique individual (one sends a sample of one’s own saliva and the test taker has a unique set of genomic markers, even if we are here simply considering a very small part of the genome), the GAT results are *per se* an articulation between individuation, deindividuation, determinism, and probabilism. The deindividuating dimension stems at least from three aspects. (i) The method for calculating one user’s genomic ancestry and associating it with specific population categories is built on a probabilistic format and thus arises from an act of deindividuation. To have probabilities that are

trustworthy, companies require them to be built on the greatest number possible. GAT companies need a lot of data to provide customers with precise information. In this sense, to process probabilities, the information delivered lies between data that relate to one individual and data that are aggregated from many customers' DNA. (ii) The second deindividuating dimension is related to the previous aspect in the sense that GAT information is not only built on a probabilistic format but is more broadly based on scientific knowledge. The science of genomics, unlike any other scientific discipline, is particularly objectifying. Genomics has been a source of great interest for sociologists and anthropologists of science and more broadly for social scientists interested in practices located at the crossroads between specialist knowledge and the construction of identities. This is due, in part, to the fact genomics is endowed with powerful rationalism which, still today, keeps at bay the possibility such scientific knowledge could be influenced by social, historical, political, or cultural factors. Genomics remains a sharp edge of scientific rationalism because, by its very nature, DNA is inseparable from a notion of biological determinism. This understanding is powerful at the lay level, and this deterministic tendency, i.e. to naturalize the population categories circulated with genomic ancestry results, is similarly strong. The correlation established between a genomic marker and a "condition," "feature," or "ancestry," stems from population genetic studies within the scope of scientific research. The DNA results –as open to criticism as a scientific study may be– are imposed on users because of their objectifying nature. The uniqueness of an individual, carrier of a unique DNA, is diluted in the scientific framework and its scope for the greater common good. (iii) The results delivered to users are meant to make them relate to population categories and information about ancestors and biological cousins in certain cases. Users are confronted with collectives they are said to probably belong to. In this perspective, the unique individual genomic input of one customer is again subjected to a deindividuating process.

GAT results are also built following another process, this time one that links deterministic logic and probabilistic logic. Whether a user likes it or not, the information received is based on specific genomic markers s/he possesses and that cannot be undone. On one hand, notwithstanding the narratives of population mobility across history circulated on GAT companies' websites and despite precautions taken -at least in major GAT companies- when presenting the categories of population, the association between one geographical region and the fact of carrying some genomic markers nonetheless promote, at least implicitly, the idea of an essence, of a genomic determinism, that would be anchored geographically. On the other hand, this deterministic logic is tempered by a probabilistic dimension that derives from how results delivered to users are constructed. GAT results are established through statistical analysis of correlations between genomic markers and a so-called regional location where carriers of these markers can be found.

The nature of GAT results makes the information deterministic, probabilistic, individuating, and deindividuating. This is usually not specified as such in the

literature nor clearly perceived by lay users. Users usually do not pay much attention to the hybrid nature of the information. However, it appears important to examine how users make sense of the information received in light of this double logic (deterministic/probabilistic and individuating/deindividuating). I will explore dynamics where users process their identity based on the results that converge or deviate from this dual dimension.

3. Methods and fieldwork

From the 1850s until the end of the nineteenth century, thousands of Belgians (primarily from Southern Belgium, Wallonia) immigrated to Northeastern Wisconsin. They reached a population estimated to be around 15,000 by 1860 (Lempereur 2008; Tinkler 2019). Today, the descendants of these immigrants still constitute a notable proportion of the population in the Green Bay area (Door, Brown, and Kewaunee Counties specifically). In this mainly rural area, many members of the Belgian community are active in the exploration and preservation of their Belgian heritage. Many members of this group have a substantiated interest in their historical and present Belgian identity. This community would have, for a long time, cultivated its Belgian cultural identity while resisting the influence of the Anglo-American culture. Contrarily to other national groups from Europe who would over generations have “‘mixed’ with people of different immigrant backgrounds and forged new racial and ethnic identities” (Horowitz *et al.* 2019, 5), it is reported that the situation of Belgian immigrants differed. According to Tinkler (2019), over sometimes 6–7 generations “a strong feeling of group identity” has been retained and has contributed to the preservation of a cohesive ethnic group until the 1950s. The borders and content of this ethnic group have been redefined over time. However, we have very little ethnographic insight for the period spanning 1950–2020. As discussed by Gans (2014), very little research has been carried out on the ethnicity of very late generations descending from nineteenth-century European immigrants. As exemplified by the persistence of the Walloon language today (among senior members), social activities still practiced and associated with this group, an acute knowledge and living memory of common Belgian ancestry, and the fact that members continue to process their identity through dynamics of ascription opposing “us” and “them” (the non-Belgians), there is still a present-day ethnic sense of identification to the Belgian category.

Henceforth, I will specify how this population in Wisconsin has been engaged in ancestry genomic practices.¹ In the broad sense, the aim of my data collection was to center on the practices –and representations– associated with the experience of Belgian ethnicity and ancestry in rural counties in the Green Bay area. In this context, my ongoing objective has been to fit into this community to better understand how “Belgian” may be contemplated as a category to which one presently belongs. Such an ethnographic approach required that I evolve from the public

(e.g. community gatherings) to more intimate settings (e.g. family gatherings). This study has been conceived within the dual-disciplinary context of both anthropology and sociology. My approach requires ethnographic methods, bringing me close to actors' experiences where narratives are produced, observing informal discussions and carrying out in-depth interviews while being sensitive to induction as a privileged way of producing knowledge. Through the Belgian Heritage Center² (BHC), a cultural center preserving and promoting Belgian heritage hosted in Wisconsin, I gained access to the community. Ahead of the first data collection, contacts were initiated and an ongoing dialogue was established with BHC's administrators who granted me access to community members. From August to November 2020, ethnographic observations and 37 in-depth, semi-structured interviews and focus groups (from 3 to 6 persons) were carried out. Informed consent was used with participants in the interviews. They have been recorded. Forms and information on the objective of the study were communicated by phone or e-mail before the interviews take place. Participants were aged between 23 and 87, and all were Wisconsin-based descendants of Belgian immigrants who self-identify with Belgian ancestry. All 45 participants (except three) are currently living in the Green Bay area. 15 among them are members and/or actively involved in the Belgian Heritage Center. 22 are women and 23 are men. It is in this larger framework that I explored the practice of GAT. Over the course of my discussions and interviews, I usually chose to downplay my interest in GAT practices, which I placed on an equal footing with other practices connected to the Belgian category. I was especially alert to how genomic data were viewed in relation to other practices (e.g. Walloon language courses, genealogical research without genomics, social networks, history books, and testimonies). Prior to the interviews, the only known characteristic of the participants in this study was that they self-identified with the Belgian category. In other words, most users of GAT I met were not targeted as such. By these means, my objective was to avoid the situation where one would accept to talk about their relationship to Belgian ancestry, but not about their potential use of GAT. The choice of this approach was intended to reduce the possible tension pertaining to the topic of genomics. During the interviews, I gradually focused on the perception of ancestry genomics to address Belgian ancestry or ethnicity.

My analysis is based on a systematic transcription of all semi-structured interviews and observational accounts. Analytical methods focus on actors' points of view & involve specifying discursive operations by which individuals make sense of the *practice* and *non-practice* of ancestry genomic testing such as ancestry genomics *knowledge* and their *results*. My analytical tools are informed by a multi-disciplinary background & draw on STS, phenomenological, and socio-anthropological methodologies. The data presented in this paper were selected on the basis that it appeared to the researcher to be particularly representative of the social dynamics discussed.

4. How do GAT users position themselves in relation to population categories and biological cousins they are presented with?

I hereafter give insight into how GAT users appreciate and position themselves in relation to population categories and biological cousins they are presented within the results from their test. I also question the types of collectives that are being inferred from DNA results and how these are used to process the identity of test users.

4.1. Displaying trust and little interest in how population categories are processed

For the users I met, GAT practice unfolds mainly with a relatively superficial interest in the technical aspects pertaining to how these companies produce the results they share with customers. Users do not pay much attention to the probabilistic format of the results received, and they are not particularly familiar with how genomic inheritance patterns are transmitted from one generation to the next. One corollary of this lack of interest lies in how users often erroneously interpret their results. When asked about how they make sense of the science behind the information received, users commonly say that they believe in the science, implying that they do not need to give much attention to how the information is constructed (“it’s science”; “I am someone who believe in the science”; “I have an appreciation for science”; “I truly believe in their science”; “I don’t have a question about the percentages because I truly believe their science behind it.”) This appreciation displayed in favor of science seems to imply users have little to no interest in the methods employed for delivering information on customers’ ancestry. They seem to give little consideration to the possibility that their results might be erroneous or imprecise, and even less to how these may be influenced by social factors. One cannot ignore that this position is formulated in the context of a research setting with an interlocutor perceived as a scientist. In such a context, it might be difficult for participants to say that they do not trust science or to present a more differentiated picture of the scientific landscape. Such a position would require not only a high level of education but also the confidence to express such views during a conversation with a researcher. It is also my hypothesis that this spontaneous stance in favor of science is not unrelated to the context of 2016–2020, where the post-truth movement (Fujimura and Holmes 2019) undermines expert and scientific discourses and methods. The relationship to science seems particularly polarized in the United States. Participants tell me they trust science because it is “scientific.” There is little room or interest for an in-between and a critical perspective on how GAT results are built.

Interestingly, participants interpret their GAT results without knowing if the population categories associated with their DNA indicate the geographic ancestry of remote ancestors or one of more recent generations. Some users stress an understanding of the fact that the window onto the past differs when the test is focused

on mitochondrial or Y-chromosome DNA. Others, when confronted with technical explanations of how their DNA is processed for their results, tell me they feel overwhelmed. Charles³, in his seventies, passionate about genealogy, told me he attended an informational meeting organized by the Church of the Latter-Day Saints – the Church owns Ancestry.com, a leading GAT company. “And I was listening to [the speaker] and it was above me, I was listening and trying to follow but I couldn’t quite understand that.” Despite the fond interest he expressed in new ways of conducting genealogical investigations, he confided in me he was unable to understand how different types of DNA analyses lead to different relationships to the past. The technicity relating to the construction of this information may appear as a hindrance. GAT companies usually provide little information on the number of past generations the results refer to. Users will, however, be making sense of their DNA results by drawing lay theories pertaining to their personal and collective identity without knowing if the connection established with the population categories is traceable to the last 200 years or the last 2000 years.

Researcher: When you did that test, was that an interest of yours to know how far back in time they go?

Francis: We weren’t looking for a specific period of time but again as I mentioned, I think when my mother’s results first came back showing some connections to Italy, that was (...) of interest in the fact that it showed my earlier migration within Europe. It would make sense that at some point there would be some connection to Italy when it was part of the Roman Empire. So, I mean that was/going back a considerable distance into the past.

The collectives, the historical events, and the population categories circulated in users’ interpretations seem to transcend the historical reality since the temporality underlying GAT results is not clearly defined and does not seem to be particularly considered. Denise is a good illustration of this dynamic. In her sixties, one of her main motivations for doing a test was to determine her great-great-great-grandfather’s origin. She wants to be sure her adopted ancestor who came from Belgium was, in fact, the receiver of a reputed “Belgian” genetic pool. She wanted to establish her great-great-great-grandfather’s “belgianness” (a term used by several participants). Implicitly, she circulates an essentialist perception of her ancestor’s identity. In Denise’s case, the stakes were to determine if the ancestor associated with Belgium was indeed Belgian, irrespective of the fact that she knows she has been raised as Belgian by a Belgian family in Northeastern Wisconsin. Interestingly, despite the fact that the test does not share any obvious association with the population category Belgian, the mention of Western Europe in her results seems to provide Denise with a sufficient degree of certainty for her to establish her ancestor’s belgianness. However, this apparently convincing scenario is established with no information on the temporality associating DNA markers with a period during which the ancestor in question (her great-great-great-grandfather) would have indeed lived in Belgium.

4.2. *Population categories loosely appreciated and the importance of validating a Belgian ancestry*

Observations discussed in the previous section are not to say that users buy the information received without any critical perspective. I showed elsewhere that users' prior knowledge about their family and the Belgian community history is systematically used in the interpretation of the test results interpretation or exclusion (Romijn, forthcoming). As shown by Hoghart and Saukko (2017), if results are seen as incompatible with prior knowledge, users will be inclined to balance the test relevance and will be at times particularly skeptical as to the veracity of the results. Other dynamics pertaining to the ways population categories are appreciated should be explored. In this section, I delve deeper into how GAT users relate to the population categories involved in their test results, including insight into how users expect to find hints connecting them to their Belgian ancestry when there is, in fact, no clear genomic marker for it. I also discuss users' reactions when facing results refined over time.

As highlighted before, scholarship on GAT is mainly focused on the risks of promoting or strengthening an essentialist understanding of identities. Companies selling GAT provide customers with results in the form of population categories that mention, evoke, or encompass ethnic, national, or racial categories. In other words, the results of these tests may "conflate genomics with socially constructed categories of the population" (Walajahi, Wilson, and Hull 2019, 174), which are often loosely defined. In addition to the risk of essentializing identities, it is worth paying attention to how users apprehend the meaning of these population categories through the vocabulary they use to mention them:

Researcher: What features of the website did you/were you expecting the most? What was of particular interest to you?

Mary: Just the idea that I wasn't a complete Belgian nationality.

A little bit further:

Researcher: With the genomic ancestry's results, have you gained a new perspective that you accept as your own?

Mary: Well, the only thing is that I was just surprised I had these other national/ (she hesitates), other nationalities that were part of my make-up.

In this excerpt, Mary uses the word "nationality," which is associated with the status of belonging to a particular nation. "Belgian" may have been the citizenship or nationality of her ancestor who made the journey from Belgium and settled in Northeastern Wisconsin, where she still lives five generations later. However, it is not the meaning of the population category circulated by her GAT results even though they are largely described in national terms (Carlson 2020, 836). Francis is one of the few respondents to insist on the "regional" perspective of these population categories:

Francis: Right. In terms of those issues, I mean I didn't view this as being particularly specific in terms of ethnicity, again it's regional. Which we anticipated. It has

specificity in terms of family relations. If this specific comes in, “this is your possible second cousin or third cousin” in that sense it is specific in time my DNA to other people who have taken the same test. But in terms of the ethnic background (he raises his voice) I don’t view this as particularly specific, just simply regional, confirming largely what we already knew.

Even though major companies selling GAT are today more pedagogical and attentive to providing information on the meaning of the population categories utilized, it is important to note that the level of understanding of these categories can be unequally shared among users, irrespective of their degree of familiarity with conventional genealogical research. Depending on the ethnic, regional, or national understanding of these categories, users think in very different ways about the collectives with which their DNA is associated. Irrespective of how GAT companies may circulate an essentialist understanding of identity, at issue is also the way users interpret and grasp the meaning of the categories circulated. Even though users may not understand them as conflating genomics with socially constructed categories of population, they might, however, misunderstand the meaning and scope of the category.

Overall, although these categories appear loosely appreciated by users, they are nevertheless, immediately appropriated as such by users. A good example of this is how participants relate to the relative absence of the category “Belgian/Belgium” from their DNA results. Tammy, a woman in her sixties based in the Green Bay area, tells me she has always been aware of her Belgian ancestry and decided to take that test despite this prior awareness, to “prove it”: “I know who I am but let’s just do this anyway. Let’s prove it. And we will have the facts.” There is a conflation in the perception of her ancestry, which is socially experienced through her family history and something that can be proven on a genomic level.

Tammy: Because my father always said he was 100% Belgian and because on paper it looks that way, when I did the test, I was expecting that it would prove that I am 50% Belgian and instead it showed I was 31% Belgian [Germanic Europe] (laughs). That was a surprise to me. It was like “what do you mean?” I questioned that because on paper, when I look at my pedigree [she looks at the documents she brought with her], I have my pedigree and it dates back several generations that my family came from Belgium. So, when the test came back saying “you are not 50% Belgian” like you thought you were. It was like, what?

The results she receives make her reconsider her prior knowledge. She questions what she knows about her ancestry from her paternal side since the results are only “31%” associable with the population category in which the territory of Belgium is included. She expected the results to be at least “50%” since half of her known kinship originates in Belgium. Her expectation is based on an erroneous understanding of both the manner in which genetic heritage is transmitted from one generation to another and the probabilistic nature whereby GAT companies build the

results they then deliver to their customers. The relation between the known family history and the results is perceived as divergent when in effect it was not necessarily so as one does not inherit in equivalent proportions the chromosomes from previous generations. It is especially important in this case study to emphasize that there is no formal genomic marker for Belgian ancestry, which is always included in larger population categories (i.e. Northwest Europe or Germanic Europe) which encompass, in the infographic circulated, the territory of present-day Belgium alongside other countries (e.g. The Netherlands, Germany, Luxembourg, part of France, and England). Users seem usually unaware of this before purchasing a test. Users I met, however, usually expect to discover an explicit or at least an implicit reference to their Belgian ancestry. It is often the main rationale behind the practice of GAT among the members of this community (Romijn, forthcoming). As Cooper tells me with despair: “I thought I would find something Belgian-related. It wasn’t at all. Nothing! (insisting).” Most users are inventive when it comes to bringing out this identification despite the absence of such a category.

Today, companies selling GAT regularly refine the results provided to their customers. As Denise tells me, she and all her family members “took the test back in maybe 2013 or 2014 somewhere in there, [then] they refine[d] the percentages. So, that part was surprising to me, I wasn’t expecting that to ever change. But I guess it changes as they build their database.” The misunderstanding regarding the revised results provides insight into users’ deterministic understanding of their test results, which are often perceived initially as permanently fixed. Some users do not expect their results to evolve because they do not take their probabilistic nature into account:

Denise: So, like the first time, it changed/it added more English. And I was/I don’t understand that connect. It would say “your DNA is being refined. Click here to see your update.” And then the percentage of English got even higher.

These revisions run against the essentialist understanding of genomic information. While genomics may appear as a highly deterministic type of information, the encounter with evolving results now compels users to make sense of and integrate the evolving – if not the probabilistic – nature of the information received.

4.3. “We are a big human family,” “We are pure Belgians,” “We are all cousins”: “collectives” inferred from GAT results

Prior to GAT, most people I met were well informed of their connection to ancestral biological kin from Belgium. They say they are “100% Belgian,” “a full-blooded Belgian,” “a pure Belgian,” and “a 7/8 Belgian.” There is pride in being able to display the fact that they carry the biological stock of Belgian immigrants who settled in Northeastern Wisconsin. Among users and non-users of GAT, there is a strong orientation inside the community to put forward their so-called “Belgianness,” biologically or genetically:

Tammy: Having proof but not only on paper, but chemically that I am of Belgian descent. Because they had to be tough people, to be strong and smart to be able to come to this rocky territory and make a life. [...]. That makes me proud to know that I am part of that. That blood floods in my veins.

For other users, the observation that their DNA results are of mixed origin on the genomic level generates a form of regret. Dora highlighted the diverse origins of her grand-children (“My kids are mutt[s] because they have so many different heritages”) and at the same time regretted that, unlike her, they will be deprived of the experience of being raised in the Belgian community. With a philosophical tone, Denise wondered what humans become as time passes:

Denise: So, my results told me that I am like 75% Western Europe and 25% Eastern, Austrian, Germany, that area. So that makes sense to me. Then you know my kids are more and more mixed and then I am sure my grandchildren are even more mixed than that. So, over time, you would think it’s going to be so mixed [so] what are they really gonna tell you? You know. So, I don’t know.

There is a singular discontent, a form of estrangement to the self (Ruiz-Junco 2011), that emerges with the realization that one becomes “more and more of everything” over generations. Since DNA is transmitted along generations, genomic ancestry information cannot be considered dependent on the self or others. This information is present in every one of her cells, and she does not have any hold on that. Apart from the search for a hint connecting a user’s DNA with a Belgian category or the regret of not being only Belgian, some users, conversely, seem to value genomic multiculturalism (Hinterberger 2012):

Tammy: It is amazing to think how much of a booyah it becomes (laughs). When you think about booyah, it’s/That’s what I end up being. I am a pot of booyah. Because I am made up of so much, that makes me who I am. And the core is still the hardworking ethical people that I come from. That’s still very important to me. It’s still part of me today.

The same Tammy (see above) refers here to a typical Belgian dish enjoyed in the region (the “booyah” which is made of a mix of vegetables served in a soup), as a means to celebrate a multicultural perspective, while simultaneously valuing her Belgian ancestry.

While the search for genomic purity (Roth *et al.* 2020; Panofsky and Donovan 2019) and the valuation of genomic multiculturalism (Hinterberger 2012; Nash 2015; Tyler 2021) have been discussed in the literature, another type of collective is at issue in this case study. This has to do with the manner in which GAT socially impacts individual and collective identities. In this community, one often jokingly alludes to a trope pertaining to a common trend toward endogamic practices in the period between 1850 and 1950. The Declercq couple tells me about how they discovered they were biologically related when a member of their congregation, a genealogy enthusiast, assembled and offered them a binder of family history research.

Husband: Actually, me and her (he shows his wife) are related. When this book came out, we found out we were related.

Researcher: I guess it's common in the region?

Husband: That's a problem. And a lot of people say that, about the Champion area, all that is a bunch of inbreedings.

Wife: Whoa (she is shocked by what he said)

Husband: When they settled here, they ain't go far. His (pointing to his father next to him) grandpa/ You know where that corner is? (he points his finger in direction of the road) That's where he found his wife.

In the same way, Leanne blithely confides in me that she recently discovered that one of her high school boyfriends was a second cousin. Cousin marriage and sibling-set marriages were common practice in America between the years 1700 and 1900 (See McKinnon 2019). Until the 1950s, I am told there was, in this community, a social pressure to get married to Belgians. As Charles tells me, “you get to a point when people start digging back in their genealogy [where] they start to see that they are related to this family and this family and this Belgian family. And pretty soon everybody just laughs and says ‘well we are all cousins’.” Among the people who self-identify with Belgian ancestry in today's Northeastern Wisconsin, there is a myriad of family connections forged over generations. “You couldn't go anywhere without running into people that you knew or were your folks,” Leanne tells me. Francis is even more explicit:

Francis: Well, my mother had 66 first cousins, just the Lacroix's side. Her father was from a family of 12. So, probably she had 100 first cousins. Now let's take it down to a generation. It happened to me more than once when I met someone, and we found out that our grandparents were siblings. We were second cousins. The second cousin is not that far removed. But I probably have 200 second cousins but I don't know them.

Many family connections are forged over generations in this Belgian community, to the extent that two randomly picked members of the Belgian community would most of the time have at least one common ancestor. This social reality raises interesting issues when members of the group use GAT. Some companies provide tools allowing users to connect with other customers with whom they share a common biological ancestor. “This digitized genomic information is held within databases and is publically accessible to others who have had similar tests” (Kramer 2015, 84). Dora tells me that it is a fee-paying service and fortunately it has been discussed on a previous board committee that the Belgian Heritage Center might purchase a subscription that would be added to the other genealogical research tools

already provided by the organization. She also says that the municipal library of Sturgeon Bay (county-town of Door County, with a population estimated at 30,000 inhabitants in 2021⁴) has “a paid subscription for you can go and work on that.” Having local cultural institutions providing this kind of tool informs us of the prevalence of such practices among the population. Then, Dora pictures what usually happens in this region when using GAT: “Basically it just tells you a name [of another ancestry.com user] and many of them are here in Door County, people that I would recognize.” Dora explains that she regularly discovers that she shares a biological kinship with “many” people she already knows, either by sight or whose names are familiar. This is a key point when it comes to delving into the biosocialities of this group with regard to the use of GAT in still recently close-knit communities such as this one. Dora tells me that she checks every now and then to see who are the relatives that are added: “they keep adding relatives, so I look through them.” Denise, another user of GAT, comes back on this situation for me. In her view, it is simple. If more people in this area did the test, they would find out that “they are related to a lot more people than they realize.”

Denise: When it comes to 3rd and 4th cousins, unless you have someone who did a lot of genealogy, in your family, the names don't mean anything to you. And [on Ancestry.com] there are thousand and there is more every day. You know. I just got a message yesterday saying there are new matches. Well, I think in my fourth cousins, I got a thousand 4th cousins.

For her, the most interesting feature of GAT is the possibility to identify biological kin:

Denise: It's not so much that make-up of the results, it's more the matches. [...]. So, if I don't recognize someone, especially, higher up, the second and third cousins, if I don't know who those people are, I am very curious to find out.

She wants to know who these putative biological cousins are. This will lead to a careful exploration of how each of the individuals connects with one of her ancestors. For Charles, this exploration of family connections goes a step further. Although he says he is disappointed with the lack of reactivity of the people he has been writing to, he stresses that what is important is to establish new connections and deepen his genealogical research. New information gathered with GAT is integrated with an instrumental perspective. Charles aims to clarify who's who and make his many family trees grow. He tells me he has recently received feedback from a biological cousin he contacted. Then, contact was rapidly established. Charles received the phone number of the user's mother and called her right away to set up a meeting. Donna explains she was recently contacted by a third-degree cousin named Mandy: “she was my mother's cousin that my mother had no idea she had this cousin, because she was giving up for adoption and ahum she used that genetic DNA research person to help her find her real parents.” After she asked Mandy if she accepted that she tell her aunt she exists, she started to share information about her grandmother: “I explained the story to

them and then I asked them for stories about her grandmother and then I was able to send her stories. So, she had a better feel of who her grandmother was.” When I ask her how that distant relative figures in her life, she stresses that she knows many other relatives already, and adds:

Denise: I consider them my kin. But even this Mandy who came out of nowhere. This cousin of my mother that she didn’t even know she had. Yeah. I consider her kin. Yeah. So, I think, and I think it’s a little bit because she cared and she wanted to know. And she wanted to know about her grandmother, which was my grandaunt and I remember her a little bit as a little kid. So, yeah, we have something in common.

As noted by Skinner (2006 , 481), “it is for “individuals” to establish the personal significance of these new relationships: “an active, self-constructing individual” who uses “life strategies,” “new and active relations to oneself and one’s future,” as well as “new and active relations” with one’s ancestors past.” (Skinner 2006).

5. Conclusions

Drawing on an ethnographic study of Wisconsin-based descendants of Belgian immigrants, I explored how GAT users inside this community make sense of genomic ancestry, in light of the specific nature of this type of information which can be considered as a synthesis between individuation, deindividuation, determinism, and probabilism. Users usually do not bear in mind such considerations. In closing, with this interpretative framework in mind, I will return to how respondents make sense of their GAT results.

GAT results combine both an individuating perspective and a deindividuating one. They are both constructed to suggest unique and individualized genetic relationships and to feed a sense of membership to different collectives (inferred from population categories and biological cousins). DNA is promoted as uniquely bound to one individual (one sends a sample of one’s own saliva). The test taker has some genomic markers that others do not have and a unique set of genomic markers overall. On one hand, this individuating dimension is not particularly expressed by GAT users I met. They do not insist on the fact their DNA is unique. Even the performance of these tests is sometimes more collective than individual (e.g. when the whole family takes the test simultaneously and the results are discovered in a group). On the other hand, ancestry DNA –this highly individuating, highly unique information– is from the start framed in relation to collectives or some sort of objectification, which, in different ways deindividuate a user’s unique DNA. This deindividuation comes from the fact GAT information is not only built on a probabilistic format but is more broadly based on a scientific format, in this case, endowed with powerful objectifying rationalism. Conversely, GAT results are probabilistically connecting users’ DNA with population categories or biological kin. What can we observe when it

comes to comparing users' interpretation of their DNA results with these two deindividuating dimensions?

Firstly, participants rarely adopt a critical perspective on how the information is constructed. They say they believe in science and, therefore, are little inclined to question the scientific quality of the information received. From this perspective, users interpret the information as objectifying. I stressed that most GAT companies are not particularly transparent regarding the window on the past their DNA analysis sheds light on. Without untangling or even mentioning the underlying temporalities, this information appears particularly deindividuating. It is expressed as "ancestry" or "genomic heritage" without viewing this information as dating back to one particular period. From their own perspective, users do not question the issue of temporality. Users rather quickly locate themselves in this timeless information and thereupon accept the inherent deindividuation. In the same way, they formulate very personal lay theories when they interpret the results based on undefined temporalities, most of the time in a way that validates preexistent affinities (Romijn, forthcoming).

When researching ways users entangle with population categories, one must acknowledge that there is a deliberate and obvious attempt or desire for deindividuation since users expect to be connected to population categories. In that respect, several observations can be made. There is an anticipation and a prior affinity widely expressed by most users: they are expecting to find an explicit or at least implicit connection to Belgium on the genomic side. From this point of view, they locate midway on the individuation-deindividuation continuum. They are searching for one specific category, they already self-identify with, to emerge. Their "belgianness" constitutes a preexistent affinity, which is known and celebrated by many of them. Conversely, this search deindividuates to the extent this sense of belonging is understood biologically, and therefore reinforces "reductionist accounts of human sociality" (Egorova 2013) as if having Belgian origin equated with being the carrier of genomic markers *proving* this origin. There is no tension for these users when looking for *themselves* in a "Belgian" collective that deindividuates. The implicit identification with this category from the GAT results builds up the user's identity narrative, which, in turn, participates in a dynamic of individuation. It may also be noted that the other population categories which are said to statistically correlate with the user's DNA are dismissed or set aside when users cannot make them corroborate with her/his sense of belonging to the Belgian category. While users assign a scientific quality to GAT results, they, however, emphasize that genomics cannot in any way discredit their sense of belonging to a Belgian ethnicity. The objectifying nature of genomic science and associated probabilities do not prevent users from being sovereign subjects.

On the individuation-deindividuation continuum, one can also observe another adjustment, this time between the celebration of diversity and an identitarian closure on a so-called "pure Belgianness." Most people I met were well informed of their connection to ancestral biological kin from Belgium. There is a form of

pride in being the carrier of the genomic stock of Belgian immigrants who decided to settle in this part of Wisconsin. They insist on the degree of “purity” of their “Belgianness,” which, they expect, will appear in the genomic results. It is also important to determine if the genetic endowment of the family might include other origins beyond the known recent Belgian ancestry. Some users –sometimes the same– further noticed the less tangible fact they are the carrier of genes transmitted through thousands of years and irreducible to Belgium. Some of them value this singular observation, while others formulate a kind of regret for their own grandchildren who will not be able to experience the same connection to the Belgian community. Others yet still express either a form of estrangement to the self (Ruiz-Junco 2011) or value genomic multiculturalism (Hinterberger 2012) along with the realization one becomes “more and more of everything” over generations. Such information is transmitted from previous generations and is strangely deindividuating since it does not depend on the self or others. Of note, I have also pointed out the particular social impact of using GAT in this community where two people identifying with a Belgian ancestry would have a very high probability of finding common relatives since most Belgian ancestors intermarried from the 1850s until the 1950s. This situation leads GAT users to face DNA results that show individuals as “biological cousins” while they often already know them prior to the test, based on their name.

I also emphasized how GAT results have this particularity of being both built on a probabilistic format and said to have a deterministic nature. What happens when users interpret their results in this light? Users usually say they are searching for “proof” of their Belgian ancestry, which would suggest they share an essentialist interpretation of their ethnic identity. Users sometimes circulate the belief that Belgian ethnic identity relies on a biological essence. An essentialist grasp of identity runs counter to the probabilistic construction of these data and the frequent revisions of the results. GAT companies regularly “refine” the results provided to their customers, who did not expect them to ever change. This initial misconception provides insight into the users’ deterministic standpoint. Genomic results are often perceived as unchangeable, and users usually do not anticipate they will evolve. With these “refinements,” genomics no longer appears as an unchangeable fact imposed on users. The results become dynamic, just as the interpretation of the association to population categories they provide.

Notes

1. This study has received ethical approval from the Institutional Review Board of the University of Wisconsin-Madison.
2. The Belgian Heritage Center is at the same time a former church in which weddings are still celebrated, a museum on the history of the Belgian settlement in the area, the location where members of the BHC gathered for meetings, a place for genealogical research. Since 2010, the BHC has become a cultural center dedicated to the preservation and celebration of the Belgian culture in the region.

- Names of the participants have been pseudonymized.
- United States Census Bureau, <https://www.census.gov/quickfacts/doorcountywisconsin>.

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