

Making Use of Models

Perspectives in Historical Research

Jacob Bohé/Charlotte Feidicker/Angela Gutierrez/Frederic Kunkel/
Laura Maria Niewöhner/Malte Wittmaack

Abstract *This essay sheds light on the question of how models and modeling could be applied to historical research. In three sections, different research fields in History will be explored concerning this question, i.e., economic history, situations of cultural contact, denazification, and the use of models in Digital Humanities. In every section, two authors discuss problems and chances in using models and modeling in their research projects within the SFB 1288 “Practices of comparing.” This essay relates to a “Roundtable” of doctoral students held on the Midterm Conference of the SFB: “Comparing & Change: Orders, Models, Perceptions.”*

Introduction

Today we are confronted with models in many contexts. We use them to transfer knowledge and understand complex causalities. In schoolbooks, students learn about the complexity of cellular processes with the help of visual models. Economists structure economic processes on the macro level in the form of models, such as Business Cycles, for a better understanding. Also, climate scientists describe climate change using models to highlight the future consequences of humans' actions in the present. These are just three possible examples of the use of models that we encounter in everyday life.

The SFB Midterm Conference made it obvious that the concept of models is used differently in each discipline. Therefore, it became very clear to us that it has to be defined specifically what properties a model has and with what aim it is created. Driven by the question of to what extent the concept of models can be fruitful for the various PhD projects, six contributors to the Young Researcher Forum at the SFB Midterm Conference have taken on the challenge of exploring the potentials and limits of modeling in historical research. According to this format, this article is constructed as an experimental essay with different perspectives on models. Based on the research interests of the participants, the article is split into three topical sec-

tions: the role of models in property markets, models as means to order people in cultural encounters, and the potential of models in sense-making. After each section, the authors summarize questions and problems that arose from thinking in models.

As a starting point for our discussion, we studied the ideas of Mary Morgan. Representing the field of History and Philosophy of Economics, Morgan pointed out that models seek to represent the world through the translation of words into (not exclusively mathematical) codes for a better understanding of circumstances, processes, and actions.¹ Therefore, all models share two common aspects: first, models require a specific language. To describe the represented object and to simplify processes, it is necessary to use specific terms. Second, models can appear in an array of visual forms. These visualizations embody an imagination of the world.² As such, models become research objects themselves.³ In this manner, models create new accounts of the world with the help of visualizations and representations, enabling us to see large-scale and typical phenomena clearly, in more detail or from a new angle.⁴

This article has taken on the challenges of using models as research objects and research practices. The first section focuses on models as research objects to trace the relations between property and financial markets. Frederic Kunkel analyses the development of Discounted Cash Flow techniques in distinction to comparative models of valuation in Great Britain from the 1960s to the 1990s. Jacob Bohé argues for valuation forms as a special type of model, relying on the work of Mary Morgan as well as his own. He further emphasizes the usefulness of valuation research for understanding the developments in the property market in the German Federal Republic. The second section focuses on concepts of bodies in time and space. To what extent did historical actors use concepts of body, blood, and race in cultural encounters, and can these be defined as models? Malte Wittmaack examines the role of bodies in one German-written travelogue from a journey to the Ottoman Empire in the 17th century. Angela Gutierrez concentrates on multi-racial family representations through the casta paintings in the 18th century and models that justified racial hierarchies in the 19th century. The third section is a combination of both models used by historical actors and modeling as a research practice. Laura Maria Niewöhner highlights the role of denazification in the US-American occupied zone in Postwar Germany and develops a perspective on how to operationalize the question of modeling as a research practice with digital tools. Following this, Charlotte Feidicker discusses

1 Cf. Mary S. Morgan, *The World in the Model. How Economists Work and Think*, Cambridge 2012, 94.

2 Cf. Morgan, *The World in the Model*, 98.

3 Cf. Morgan, *The World in the Model*, 380, 386.

4 Cf. Morgan, *The World in the Model*, 95, 96.

the use of annotations as a modeling process that influences both analog and digital approaches in historical research.

Models as Research Objects in Economic History

Modeling the British Property Market (Frederik Kunkel)

Financial and property markets have always been closely linked. Nevertheless, various academic disciplines have repeatedly discussed the development and the connection of the two markets with reference to the phenomenon of financialization.⁵ Generally speaking, the majority of these approaches commonly assume that the logic and practices of the financial sector have increasingly dominated the real economy (i.e., property markets) since the 1960s.⁶

Financialization through the lens of economic modeling

In the context of British property markets, I want to examine these assumptions through the perspective of Mary Morgan's conceptualization of economic modeling, by utilizing models as an indicator of financialization. Analysing the development and impact of economic modeling is, in principle, nothing new. Relevant studies have illustrated the dynamics of certain economic models and their effects on the real economy.⁷ However, as Morgan describes it, the performance of certain models does not explain their status as the "right model for the job."⁸ As a crucial point for the development of economic models, Morgan points out that "those creating economic models must pick out what they take to be the salient points of the economy [...]."⁹

Transferring these considerations to the British property market results in a promising praxeological approach to understanding the relationship of finance and

5 Cf. Manuel Aalbers, *The financialization of housing. A political economy approach*, London/New York 2016; Natacha Aveline-Dubach, The financialization of real estate in megacities and its variegated trajectories in East Asia, in: André Sørensen/Danielle Labbé (eds.), *Handbook of megacities and megacity-regions*, Northampton 2020, 395–410.

6 Cf. Ewald Engelen, The Case for Financialization, in: *Competition & Change* 12 (2/2008), 111–119; Johnna Montgomerie/Karel Williams, Financialised Capitalism. After the Crisis and Beyond Neoliberalism, in: *Competition & Change* 13 (2/2009), 99–107.

7 Cf. Donald MacKenzie, The Big Bad Wolf and the Rational Market. Portfolio Insurance, the 1987 Crash and the Performativity of Economics, in: *Economy and Society* 33 (3/2004), 303–334; Donald MacKenzie, *An Engine, Not a Camera. How Financial Models Shape Markets*, London 2006.

8 Morgan, *The World in the Model*, 399.

9 Morgan, *The World in the Model*, 383.

real economy, wherein the “doing” of a model is closely linked to certain techniques of economic valuation.

Modeling the British Property Market

As of the 1960s, booms and busts on the British property market—affecting both access to and the profitability of investment properties—led to surges in numbers of market participants, primarily from the financial sector (e.g., insurance companies and pension funds). As a result of these influxes, the question concerning the “most suitable” valuation technique and the respective underlying model was the subject of recurring debates.

The reason for these debates resides in the fact that unlike, for example, stock markets, where the market price in the form of mere transactions is a positive statement, real-estate markets require the intermediate step of valuation due to the heterogeneity of assets.

In the UK, the traditional valuation technique aimed to calculate a market price through the comparison of past prices. This technique varies fundamentally from the logic of the financial sector, where valuations primarily aimed at determining the *Investment Worth* through future cash flows in distinction to comprehensive market prices.

In the course of changing economic contexts and the influx of financial investors, this divergence posed a major problem, especially in the face of bear markets. As prices fell, the number of transactions required for a reliable valuation (i.e., established comparative method) decreased and the valuation inevitably became more subjective. In consequence, this prevented investors from comparing returns from property with alternative investment opportunities (e.g., equities, bonds, index-linked gilts), whose valuation techniques were focused on the rational estimation of cash flows.

My objective now is to determine the relationship between financial and property markets in the UK by analysing how different actors approached certain forms of modeling, the corresponding valuation techniques of which ultimately prevailed in varying historical contexts.

Historical Indications

Thus far, there are indications that the demand for new approaches to modeling goes hand-in-hand with certain economic turning points between 1960 and 2000. For example, stockbrokers first criticized the current valuation model in the aftermath of the secondary banking crisis of 1973.¹⁰ Moreover, in the context of the booming property market of the 1980s and the major influx of more sophisticated financial players, experts from the established professions attested that “consequently if surveyors are

10 Cf. Andrew Baum/Neil Crosby, *Property investment appraisal*, London 1988, 18.

to maintain their position they must, at the very least, attune themselves with alternative approaches, even if they do not necessarily agree with them.”¹¹ A further example is provided in a publication by the Royal Institution of Chartered Surveyors in the aftermath of the housing crisis of the early 1990s. It explicitly states that “the valuation profession needs to improve the technical element of its skill by updating and extending its use of mathematical models.”¹²

Taking the publications cited above into deeper consideration, my aim is to render financialization more tangible by looking at the practices that go hand-in-hand with the attempt to enforce certain valuation standards through models. Though the exact course of events, the various positions, and groups of actors as well as the impact of the debates on valuation practice cannot be fully described here, highlighting the process of modeling itself seems to be a promising path to sharpen the definition of financialization in a more selective and event-related way.

Forms as Models (Jacob Bohé)

Forms as special models

After the first part of this section has explored the usage of classical economic models in the realm of property valuation, I want to broaden the understanding of models in the context of property valuation. As a starting point, it is useful to recapitulate what typical economic models are. According to Mary Morgan:

[...] economic models are pen-and-paper objects, not objects of, or in, the world but artifacts made to represent – to depict, denote, or describe – things in the world [...]. The models of economists are diagrams, sets of equations, or accounts, in which economists adopt standardized and formalized conventions to denote their phenomena of interest [...].¹³

From this description of models, similarities to forms can be drawn. Forms are also pen-and-paper objects made to represent things in the real world. Just like models, forms adopt standardized and formalized conventions about property valuation.¹⁴ My research examples revolve around the special case of property valuation by

-
- 11 Michael Patrick, What Use is Property Performance Analysis, in: *Journal of Valuation* 2 (2/1984), 137–141, see 137.
 - 12 RICS, Commercial Investment Property. Valuation Methods. An Information Paper, London 1997, 19.
 - 13 Morgan, *The World in the Model*, 382.
 - 14 Cf. Klaus P. Keunecke, *Immobilienbewertung: Entscheidungsorientierte Ansätze bei der Grundstücks- und Gebäudebewertung*, Berlin/Heidelberg 1994, 36–37; Viktor-Hermann Müller, Die Bewertung von Immobilien: Verfahrensweisen, quantitative und qualitative Methoden, in: Marlies Brunner (eds.), *Geldanlage mit Immobilien*, Wiesbaden 1994, 267–87, see 270–271.

banks for building loans. The goal of these valuations is to derive a loan value (Beleihungswert) that builds the basis for a loan that is backed by the property itself as a security. Historically, banks have used complex forms that developed within each bank individually. These conventions led to the emergence of different forms depending on the type of building.¹⁵

My first example focuses on the emerging mass market for self-owned properties in the 1970s. This required banks to change their valuation forms—to shorten and simplify them. This also meant that forms became more specialized and focused on certain types and sub-types of properties. While this made the valuation of near-standard properties easier, it meant that the forms had weak points when properties fell outside these idealized characteristics.¹⁶ The emergence of penthouses in Germany was such a special valuation case. The problem for valuation stems from the fact that the penthouse sits on top of an apartment building. While the penthouse is clearly part of the same building as the remaining apartments, it is also clearly distinct from the apartment units. This led to the discussion of whether penthouses should be valued as part of the apartment building or if the penthouse should be valued as a single house and then added to the value of the remaining apartment building. In this latter approach, new sub-forms were introduced for this special type of property.¹⁷

The second example is comprised of highly individualized and expensive single-family homes. Here, I want to recall that the property valuation by banks is focused on using the property as a security for the loan itself. Thus, the property should guarantee a minimum price when being offered for sale. As a result of these properties being highly individualized and expensive, the calculated values were not reached when sold. When sold within a few years after their completion, many of these properties could only recoup 50 to 70 percent of their original value. This meant that with the use of standard valuation forms banks unknowingly started to engage in risky loans.¹⁸

As special types of models, forms share characteristics with models. They are also pen-and-paper objects, and they work in a similar fashion. The first example has shown how abstract forms can be modeled to depict real-world objects, while the second example has shown the representation problem of forms. If large parts of

15 Cf. Fritz Pohnert, *Kreditwirtschaftliche Wertermittlung: typische und atypische Beispiele der Immobilienbewertung*, Wiesbaden 1981, 14.

16 Cf. Pohnert, *Kreditwirtschaftliche Wertermittlung*, 14; Theo Gerardy, *Praxis der Grundstücksbewertung*, München 1971, 51; Friederike Sattler, *Der Pfandbrief 1769–2019: von der preussischen Finanzinnovation zur Covered Bond Benchmark*, Stuttgart 2019, 189.

17 Cf. Fritz Pohnert, *Kreditwirtschaftliche Wertermittlung: typische und atypische Beispiele der Immobilienbewertung* (4. Aufl.), Wiesbaden 1992, 46.

18 Cf. Theo Gerardy, *Praxis der Grundstücksbewertung* (3. Aufl.), München 1980, 621–622; Pohnert, *Kreditwirtschaftliche Wertermittlung*, 25–29.

the initial value are lost in a few years, it indicates that these forms cannot represent the real world in the envisaged way.

The Value of Valuation Research

Having shown how forms are a special type of model, I will now proceed to address the added worth of studying models of valuation. I want to focus on two aspects based on my own research. I want to highlight, first, the value of models for understanding financialization processes in the property market, and second, what this can teach about the relation between different actors on the property market.

Financialization has been extensively researched, especially in the social sciences. A historical perspective that considers historical continuity and changes in valuation models can shift research focus and enhance understanding of financialization and its processes. Utilizing the practical application of valuation methods opens up the terrain for praxeological research into practitioners of valuation practices. It can shed light on the formation and change of conventions or standards of property valuation. Here, through the lens of valuations, the intrusion of financial actors into the property market can be traced and analyzed. With the help of valuation models different groups can be sketched for the property market, depending on what valuation models they advocate.

Conclusion

Identifying what models are is not as intuitive as it seems, which the next section will explore further. This text has provided arguments for why valuation forms are special types of models. As models they are “artifacts made to represent [...] things in the world [...]”¹⁹ The forms are modeled with real-world counterparts in mind but without the intention to fully depict them. However, their degree of success at adequately representing a real-world object—in this case, the value of a property—can fall short. In some cases, it can fail dramatically. Building on this argument the text has shown why research into valuation models is a worthwhile endeavor. It can shed light on financialization processes in the property market and it can highlight relations between financial intermediaries.

19 Morgan, *The World in the Model*, 382.

From Ideal Types to Models? The Relation of Ideal Types and Models in Ordering People from the 17th–19th Century

Ordering—Modeling—Comparing from an Early Modern Perspective (Malte Wittmaack)

Early modern travelers were confronted with an unfamiliar society in the Ottoman Empire. Travelers used customs, such as the moderate eating habits in the Ottoman Empire, as an exemplum.

Unlike the mathematical models that are closer to what Morgan presents, models in the early modern period are more ideal types, which in themselves could be considered models, but not so clearly as the numerical models in economics. How, then could these ideal types or *exempla* in the early modern sense be understood as models?

In the course of cultural exchange, comparisons facilitate the positioning of the self relative to others, and power dynamics inform the notion of ideal types that are negotiated in these exchanges.

Below I will also draw attention to the analytical models that historians use to understand their sources.

The first model type can be explored in Ferdinand von Triolo's travelogue. He was a nobleman who traveled to visit Jerusalem, and wrote:

They do have hospitals/but few sick people; and what I have been most astonished about/has been/that so few poor/crooked and lame people are found among them/who beg back and forth in the alleys or streets as they do among us/I do not know whether the good climate or the great barrenness to live is the cause of this: For they usually do not drink wine/do not use many different dishes/as it is common in Christianity/where one loads the body with unnecessary food/and one cannot get enough of preparing the tasty morsels/nor does one consider/perhaps overfilling the stomach with it/because of this one must rightly say : Gluttony kill many like the sword.²⁰

What can be seen in this part of Triolo's description is a multilevel, complex comparison:²¹ at one level, he compared the Ottoman Empire and the Holy Roman Empire

20 Ferdinand von Troilo, *Orientalische Reise-Beschreibung, wie dieselbe aus Teutschland über Venedig, durch das Königreich Cypren, nach dem gelobten Lande... von dannen in Egypten ... und vielen andern entlegnen Morgenländischen Orten mehr ... vollbracht*, Dresden, 1676, 542 (author's translation).

21 Cf. Angelika Eppe/Antje Flüchter/Thomas Müller, *Praktiken des Vergleichen: Modi und Formationen. Ein Bericht von unterwegs. Workingpaper des SFB 1288 No. 6*, Bielefeld 2020, [https://doi.org/10.4119/unibi/2943010].

regarding the number of hospitals and unhealthy people in the streets. On another level, he compared the different eating habits of the Ottoman and the Christian people and the climate they lived in, regarding the effect that these aspects had on the body and on someone's health. Between these two comparisons, he constructed a causal relationship: The moderate eating habits and the mild climate he made responsible for the health and the good condition of Ottoman people.

The model is, so to speak, the result of a comparison because Christians and Muslims, as *comparata*, were compared regarding eating habits.²² At the end of this comparison, the Muslims were marked as a positive example. These comparisons, with positive connotations concerning the Muslim Ottoman population, had the aim of improving people's habits and customs in Christendom. The idea of self-comparisons by the readers of travelogues, which the author intended, could be an example of early modern ideas of the connection between model, comparisons, and change: models were, in this report, and also in other travelogues, constructed through comparisons. These comparatively generated models could and should be used for self-comparisons with the aim to improve the Christian readers' behavior. Here change should not be understood as a macro phenomenon like "historical change." The authors intended the personal change of individuals. This kind of model is, in my opinion, typical regarding early modern notions of models. Models were constructed so that people could orient themselves according to them. They were not just ideals; people were supposed to reflect on them, compare themselves to the models, and base their behavior on them. The Turks as models includes an interesting contradiction because, in some instances, the Turks were constructed as a positive example, whereas most of the time they were perceived as "the infidels." But travelers observed the Turks from an idealistic perspective which emphasizes only the things that should be improved in Christianity. In the text, there is no admiration of the Turks in general, especially not in the case of their religious habits.

The second model I want to sketch out is my analytical model: in my own project, I'm interested in comparisons that order people in cultural contact, and which are related to the body. To understand bodies in premodern Europe, historians need to know the characteristics of early modern body knowledge. Barbara Duden said we "cannot be too careful not to use [our] own body as a bridge to the past."²³ So in the first instance, I had to leave "models" of the modern body behind before I was able to analyze the premodern body. I decided to use methods from historical anthropology to investigate the conceptions of the bodies that the travelers had and used in their

22 Cf. Rebecca Earle, *The Body of the Conquistador. Food, Race and the Colonial Experience in Spanish America, 1492–1700*, Cambridge 2012, 3–5.

23 Barbara Duden, *The Woman Beneath the Skin. A Doctor's Patients in Eighteenth-Century Germany*, Harvard 1991, 2.

texts. A method like this was not completely determined by abstract theories and complexes of early modern body knowledge. I wanted to analyze how the historical actors understood and used these ideas in their own way. I suggest that body knowledge in the early modern period was for most people a kind of latent knowledge, like medical knowledge is for us in modern times. I started to ask which discourses the early modern travelers related their bodies to and how they explained their bodies' health and functioning. But this also seemed to be a model of the early modern understanding of the body. The question is whether we can analyze historical sources without a concrete model, because our methodological tools are always tools to reduce the complexity of the many things we can find in historical sources.

I constructed a model from theoretical literature to search for the body in early modern texts. I used this method to avoid an ahistorical narrative.

While as researchers we utilize models to investigate our objects, the use of models to describe the object itself would not be so helpful to my research. Nevertheless, it seems necessary to think further about models: what role will models as a research object play in early modern thinking? How can theories of models and modeling be applied to early modern sources, and what advantages will the term 'model' have in the research of early modern times? Were there other ways of thinking to reduce complexity in the early modern world which were not labeled as 'modeling' but which had the same function? The question also arose regarding the relationship between theories, methods, and models in historiography. Are there theories and theoretically based models to analyze sources?

How Historical Actors Mold Racial Hierarchies through Models in the Americas (Angela Gutierrez)

In her book *The World in the Model*, Mary Morgan writes about models as representations of a world, a concept, mechanism that is imagined by the modelers. The text states that economists "use their imaginations about the hidden workings of the economic world to make representations of those workings in equations or diagrams." While they need not be purely mathematical, they represent a slice of the world, depending on what elements of life they are supposed to illustrate.²⁴ Models have two elements that make them helpful in understanding abstract concepts. In my view, models help me visualize and distinguish the foundations of a mechanism, but they also allow a deeper understanding once those foundations are established, a zooming out and in if you will. However, there is a further distinction, namely how historians or scientists use models to look at the world or, in my case, the past, and how our actors use models to understand their worlds. A model, to

24 Morgan, *The World in the Model*, 118.

me, is a representation of the world but also a tool with which to look at it differently and find nuances that I could not see before. In using the approach of practices of comparing, establishing the *comparata* (entities or objects being compared) and *tertium* (the point of relation) in a visual model helps me to do that. My dissertation topic focuses on the journalistic community and how they wrote about race and racism from the last Cuban war of independence to the massacre of 1912, as well as investigating which practices of comparing contribute to changes in perceptions of racial classification and identity, by concentrating on the position of the actor and what they *do* when they compare. The act of comparing as a practice plays a critical role in the way in which categories are formulated, hierarchies are ordered, and boundaries are constructed.²⁵ Therefore, the model of what is seen as important for comparisons is helpful in identifying those elements from discursive debates on a given topic. There are a variety of ways that actors use models with regard to the topic of race and racism in the Americas, ranging from colonial racial hierarchy to racial science. For example, the *casta* paintings that depict various multiracial families (up to 16 paintings in a series) provide a visual distinction of racial hierarchies through an imagination of how the colonial world should look, from the top down. These models of human stratification are used to simplify and order the miscegenation occurring far from the seat of colonial rule and colonial control. At the end of the 18th century, these paintings of “*casta* imagery emphasized not a *casta* taxonomy but a physiognomic view of colonial bodies marked by *calidad* (Class) that is, the appearance, circumstances, and assumed inherent character of types of mixed-blood persons.”²⁶ These paintings then visualize a molding of societal order due to the increasingly blurred lines that came from racial mixture into a clear categorization that outlined how certain people should dress and what occupation they should have; even elements of behavior are visually represented. While this example is not directly related to my period of investigation or the space in which my research takes place, the representation still reflects a constructed order in which these paintings visualize the racial hierarchy.

Later in the late 1800s and early 1900s, scientific racism was also creating models to justify a racial hierarchy through numerical tables that compare the measurements of skulls, creating connections between the numbers and the characteristics they were meant to represent. In 1900, the body of the beloved Afro-Cuban general, Antonio Maceo, was exhumed to allow scientist to measure his skull and skeleton, which allowed them to correlate his “remarkable capacity” with the craniums of the

25 Cf. Willibald Steinmetz (ed.), *The force of comparison. A new perspective on modern European history and the contemporary world* (New German Historical Perspectives, 11), New York/Oxford 2019, 8–9.

26 Magali M. Carrera, *Imagining identity in New Spain. Race, lineage, and the co-lonial body in portraiture and casta paintings*, Austin 2003, 120.

white race.²⁷ The classification of people lent a sense of authority to racial scientists, who held the measurements of European bodies to be the ideal, the model of humanity. For example, German Scientist Johann Blumenbach, who collected skulls and kept records of their measurements, referred to the Caucasian skull as the most beautiful in form.²⁸ These measurements presented a legitimization of a racial hierarchy and created numerical models in which the boundaries of categories were delineated, but are models the articulation of an ideal or tools with which to investigate? Or both?

Morgan explains the Edgeworth box as a malleable small-scale object, a model that is created to represent the economic exchange between individuals. The development of this model through the addition of details, such as different curves that display insights from the different elements of the exchange, shows how change occurs through an ever-evolving re-articulation of how people understand the world. Language develops, and so do the many mediums in which we can imagine the world around us, and meaning is developed from this. While, as the author states, the Edgeworth box cannot be reduced to mere language, once we have a medium of articulation, then new views or perspectives of the world can be formed. Models are then loosely the description of a world we imagine but are also a way to perceive or become conscious of certain elements that were difficult to see without the model—further elements that one cannot see, such as a connection or a trend. The question is then how loosely we can define what a model is and its possibilities in the field of history.

Conclusion

In our premodern sources, we identified ideal types more often than models. Models and ideal types worked in a similar way regarding their building process and in their function to reduce the complexity of the world. For their ideal types, the actors select certain aspects of the world and neglect others. From this finding, we raise the question of whether “modern” models were influenced by premodern ideal types in the *longue durée*.

While ideal types aim for individual change—for example, eating habits—models seek to predict larger phenomena like societal growth. In our opinion, they differ in terms of the level of change that they address. The demographic statistics collected through census records inform government officials to act and create policies tied to the information. Ideal types, in contrast, were built to facilitate an individual

27 Alejandra M. Bronfman, *Measures of equality: social science, citizenship, and race in Cuba, 1902–1940*, Chapel Hill 2004, 1.

28 Thomas Junker, Blumenbach's theory of human races and the natural unity of humankind, in: Nicolas Rupke/Gerhart Lauer (eds.), *Johann Friedrich Blumenbach. Race und Natural History. 1750–1850*, New York 2018, 104.

change in people's behavior, as can be seen in the case of Casta paintings or in the Ottoman Empire. These ideals reflect the construction and stabilization of social life into certain (hierarchical) orders.

It can be helpful to reflect on the models we use to look at our sources in History: modeling as a research practice. The Methodology of History can fruitfully be described as modeling, which will be elaborated upon in more detail in the following section.

Modeling as a Research Practice

Denazification as a Model (Laura Maria Niewöhner)

As Morgan explains, "Modelmaking gives form to ideas about the world."²⁹ Following this broad definition, the concept of models addresses different forms, such as models as an ordering tool (much as was discussed in the previous section), modeling *performed* by historical actors, and *modelling as a research practice* on a *theoretical* and *methodological* level.

An act of modeling can be traced in denazification tribunals of the American occupied zone of Postwar Germany. How did historical actors use models as an ordering and structuring tool?

In the denazification, various groups of interest, such as Germans as subjects of the tribunals, administrators of the Special Branch of the Office for Military Government for Germany (OMGUS), administrators from Tribunals/Spruchgerichte, and witnesses, came together for one purpose: dealing with the National Socialist Past. With the introduction of the law *Gesetz zur Befreiung von Nationalsozialismus und Militarismus* on March 5 1946 by the OMGUS, the denazification system was institutionally implemented in Germany. In the preprocess American administrators have found themselves in the *role of modelers*: the very new concept of denazification can be characterized as a categorization system.³⁰ It aimed to classify Germans from several regions and professions according to the categories of *Major Offenders* (I.), *Offenders* (II.), *Lesser Offenders* (III.), *Followers* (IV), and *Exonerated* (V.).³¹ It sought for the evaluation and sanctioning of the involvement of individuals in the National Socialist state.

29 Morgan, *The World in The Model*, 92.

30 Cf. Stefanie Rauch, Good Bets, Bad Bets and Dark Horses: Allied Intelligence Officers' Encounters with German Civilians, 1944–1945, in: *Central European History* 53 (1/2020), 120–145; Lutz Niethammer, *Die Mitläuferfabrik. Die Entnazifizierung am Beispiel Bayerns*, Berlin 1982, 12–13, 260–318.

31 Cf. William E. Griffith, Denazification in the United States Zone of Germany, in: *The Annals of the American Academy of Political and Social Science* 267 (1950), 68–76, see 70.

Models require new languages and new types of representation to describe and analyze larger phenomena:³² by establishing new categories, American administrators established new semantic patterns that created a new representation of German society members. One term to describe a person who was involved in the National Socialist State to a certain degree but without being particularly active in their engagement would be the category *Follower*. On this institutional level, an *act of modeling* as a way of dealing with the National Socialist society can be observed. It not only seeks to categorize Germans but also provides an institutional tool to bring order from above to the society in Postwar German through this categorization.

How did historical actors model?

On a micro level, American administrators and members of the Tribunals/*Spruchgerichte* acted according to the logic of the denazification: namely, through investigating a subject and his or her National Socialist past in each case. This seems like another *practice of modeling* by contemporaries itself. Members of the Court Chamber/*Spruchgerichtskammer* evaluated the presented narrations, or “Entnazifizierungsgeschichten,”³³ of each Tribunal’s case. The term means that each case subject unfolded a specific narration during the tribunal to reach the “best” result for him or her. For this purpose, members of the Tribunals/*Spruchgerichte* referred to investigation reports made by the Special Branch of the OMGUS, interrogations or testimonies.³⁴ However, from this perspective, the verdicts/*Spruchurteile* seem like a result of modeling: *modeling of one’s individual past* in the sense of creating a perception from the case subject’s past, which is linked to the grand model or categorization system of denazification as a large-scale phenomenon. In addition, for example the Tribunals’ subjects performed *practices of modeling* while shaping their narrations about the past. By adding several ego-documents, which were intended to testify to the Tribunals/*Spruchgerichte* that they were innocent, the tribunals’ subjects contextualized their own questionnaires/*Fragebögen* and created an image of themselves. In so doing, they participated actively in the court case.³⁵

32 Cf. Morgan, *The World in The Model*, 98.

33 Hanne Leßau, *Entnazifizierungsgeschichten. Die Auseinandersetzung mit der eigenen NS-Vergangenheit in der frühen Nachkriegszeit*, Cöttingen 2020, 34.

34 Regarding to its broad tradition of the tribunal’s documents, a few files from the Hessen Region can serve as examples for this modeling process: cf. The National Archives and Records Administration (NARA), 7062935, Fragebogen Files Relating to Denazification, 1945–1948, Container 85 Dossier 9, Container 92 Dossier 347.

35 Examples for ego-documents written by tribunal’s subjects from the Hessen Region: cf. NARA, 7062935, Container 53 Dossier 168, Container 53 Dossier 177.

How do researchers model research objects?

By identifying the concept of denazification as a model and searching for practices in the tribunals, the notion of *modeling as a research practice* became visible. The specific act that an historian performs is that of modeling the research subjects from the past. Practically speaking, adapting praxeological concepts and imagining the groups of interests that participated in denazification tribunals as a *community of practice* seems like *modeling as a research practice on a theoretical level*.³⁶ Theoretical concepts help researchers to structure both historical phenomena and research subjects. It is important to stress this degree of reflection because it opens up the research field for methodological questions: firstly, how can historians access *practices of modeling performed* by historical actors described above? Secondly, how is it possible to make the actions of historical actors as modelers in a communicative space, such as during denazification, visible? As shown, historians often consider research subjects by taking into account certain assumptions or definitions of phenomena. Traditionally, this part of the research process is driven by hermeneutical analyses. In engaging in this way, historians perform modeling themselves; they create new terminologies and to some extent present the past in partly new ways. The development of the research process is not always transparent, however. To approach this dilemma, the methods of the field of digital history offer a way to journal research processes and modeling as a research practice. Working with digital tools requires the transformation of one's own research questions explicitly into computational data, languages, and models.³⁷ In particular, modeling in this case means integrating data and plain text from the historical material into digital workflows. One option could be annotating historical texts; another option could be to set up a database. Both ways inhabit *modeling as a research practice on a methodological level*. Which approach is more effective depends on the researchers' interests. They need to be clear because they greatly influence the workflow with digital tools, and determine what will be visible and what will remain invisible after the usage of digital methods.

Thinking in Models (Charlotte Feidicker)

As discussed, modeling as a research practice becomes an important question in digital history workflows. One central point of working digitally is dealing with digital data, which methodologically influences the entire workflow of a research project.³⁸

36 Cf. Etienne Wenger, *Communities of practice. Learning, meaning, and identity*, Cambridge 1999.

37 Cf. Fotis Jannidis, Grundlagen der Datenmodellierung, in: Fotis Jannidis/Hubertus Kohle/Malte Rehbein (eds.), *Digital Humanities. Eine Einführung*, Stuttgart 2017, 99–108, 100–101.

38 Cf. Simone Lässig, Digital History, in: *Geschichte und Gesellschaft* 47 (2021), 5–34, see 6–7.

A leading definition of data as digital data was given by Schöch: “Data in the humanities could be considered a digital, selectively constructed, machine-actionable abstraction representing some aspects of a given object of humanistic inquiry.”³⁹ Schöch already limits the term “data” to exclusively digital data, and stipulates that it must be processable by computers. He emphasizes the creation of data as driven by (scientific) interests that create a selective perspective and thus determines the data’s selection process itself. Moreover, data is created and processed with certain tools, each of which has its own possibilities and limitations. In short, it has to be noted that the production of data—i.e., of machine-readable information entities—depends on many preconditions. If the conditions change, different data emerges.⁴⁰ Keeping this in mind, the given definition addresses an important aspect of data, regardless of whether it is described as digital or analog: data is an abstraction that represents certain aspects of a question in the humanities.⁴¹

But it is not only data that can be defined as an abstract representation of whatever entity. Models are defined as such, too. Thus, the question arises as to what the relation between data and models looks like. Data is what models model or, the other way round, a model gives the data its framework.⁴²

Whether analog or digital, doing historical research is always a process of modeling. More explicitly, it is a process of modeling the past on the basis of data from the past, using contemporary methods. How the information entities are related to each other depends on the data model that a historian creates. This model is thus created from the point of view of the historian living in the present, and is therefore strongly influenced by the historian’s understanding of the past through living in the present. Since modeling is a process of relating information entities to each other from a specific perspective that creates a representation of something, I describe the process of understanding the world—whether the past, present, or future world—as a modeling process. By creating and dealing with digital data, this process becomes very explicit. That is because every information entity has to be defined explicitly to be processable for a computer.

Let us imagine that I find a medieval handwritten manuscript from the area of English legal history in an archive. Further, that I manage to digitize the main text into plain text by first scanning the document and then (semi)-automatically transcribing it with HTR software. When rendered in plain text, a human is able to read

39 Christof Schöch, Big? Smart? Clean? Messy? Data in the Humanities, in: *Journal of Digital Humanities* 2 (2013), 2–13, see 4.

40 Cf. Schöch, Big? Smart? Clean? Messy? Data in the Humanities, 3, 4.

41 Cf. Schöch, Big? Smart? Clean? Messy? Data in the Humanities, 4.

42 Anna Neubert/Silke Schwandt, Comparing in the Digital Age. The Transformation of Practices, in: Angelika Eppe/Walter Erhart/Johannes Grave (eds.), *Practices of Comparing. Towards a new understanding of a fundamental human practice*, 378–399, see 394, 395.

the manuscript very easily. Furthermore, if the person understands the language in which the text is written, they can understand the content. This understanding improves with the amount of contextual knowledge the person has. In contrast, the computer does not understand any content of this plain-text format. For the computer, the plain text is a string consisting of ones and zeros. This is why, at this stage, the most I can do with the plain text is to search for a certain sequence of letters in it or count the number of words used. For most historical research, more complex query options are needed.

At this point, it is important to think about what kind of output from working with this digital data a research project is aiming for. For example, if one would like to create a database by using a specific database-management system, the data has to be structured in a different way than if the aim is to track down a citation network in a corpus or to visualize information in diagrams. For all these scenarios a computer program needs more information than just: “there is a string.” A good way to enrich the string with information to categorize and structure the ones and zeros is to make annotations.⁴³

Annotations give information about a piece of data. For example, a string can be classified as a text written by a specific author. Further, I can categorize a given information entity as a token of a specific type.⁴⁴ For example, it is possible to tag the name “Matthew” as a name. More specifically, I could also tag “Matthew” as a name of a human that was an evangelist who was also an apostle and wrote a part of a book that we call “The Bible.” By annotating such information, I give specific perspectives on the world that I live in. On the one hand, this information explicitly explains what kind of subjects exist in my world: humans, names, evangelists, apostles, books. On the other hand, the information given explains how these subjects relate to each other: humans can have names; humans can be apostles and humans can be evangelists, and they can be both but don’t have to be both; humans can write books and books can be special religious books; books can have names, etc.

Annotating a text is giving information about my interpretation of this text. As they are interpretations, annotations are never objective. People can only annotate what exists in their world (whether real or unreal) and in a research process, they would only annotate what is important for their research. Therefore, annotating is a method by which I explicitly express theoretical assumptions—I model. I model because I determine which entities occur in my studied world and how these entities relate to each other. This kind of methodological work is something that all histori-

43 Cf. Jannidis, *Grundlagen der Datenmodellierung*, 101.

44 Cf. Andrea Rapp, *Manuelle und automatische Annotation*, in: Fotis Jannidis/Hubertus Kohle/Malte Rehbein (eds.), *Digital Humanities. Eine Einführung*, Stuttgart 2017, 253–267, see 255–257.

ans do—whether analog or digital. Those who work digitally just have to model in a computer-understandable format.

I would like to speak of “modeling” in the context of doing historical research because the following becomes very clear in digital work: if one uses a different theory as a concept to understand the past and adds different information to the primary sources, one gets a different result. As this result becomes the basis of further scientific historical interpretation, historians obtain a specific, modeled perspective on the past that is determined by their way of relating data in the present.

Conclusion

In section IV, we have experienced models as a fruitful theoretical and methodological approach for historical research. It can be helpful to understand modeling processes used by historical actors. Identifying these processes opens up perspectives about narrations, perceptions, and evidences historical actors have created to make sense out of their reality.

Using models as a methodological research practice—especially in digitally driven approaches—reveals the theoretical assumptions historians use to interpret research objects from the past. These digital approaches require computer-understandable, and thereupon specified, definitions of the historical assumptions. This includes clear research questions and interests just as much as queries, annotation categories, and data structurization. Therefore, modeling as a research practice maximizes the intersubjective comprehensibility of historical research. We wanted to think about how the notion of models could work with practices of comparing, which is an important element of our projects, and the possibility of uncovering a new perspective through such a notion.

Final Conclusion

Coming from vastly different projects, we questioned the notion of models within our work. In the process it became clear that there were different types of models, as reflected by the sections of this article. These different types of models also informed how the article is structured.

The first section is closest in following the description made by Morgan on models that actors use to reduce complexity. The usage of her concept is a fruitful tool because models not only describe but also shape reality in a specific context, such as the real-estate market.

In the analysis of the stratification of people in ethnographic sources, the concept of models is not easily applicable. Instead, we were able to identify ideal types in the second section. The exact difference between models and ideal types, as well

as the question of whether models can be identified in premodern sources at all, has to be researched further.

The last section bridges modeling performed by historical actors and modeling as a research practice by structuring knowledge and logical relations between data. The relevance of a logical data structure in (knowledge) models became obvious by using methods of digital history. In the field of digital history, models structure digital data and therefore make information entities machine-processable. At the same time, models—whether digital or analog—help us to think through complex logical information relations.

Coming from different spatial and temporal contexts, thinking about models helped us to understand connections and differences between our projects. We gained clarity regarding the essential entities and questions that shape our research. Therefore, we suggest experimenting with the concept of models in order to explore new perspectives.

Bibliography

Primary Sources

- THE NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA), 7062935, Fragebogen Files Relating to Denazification, 1945–1948, Container 53 Dossier 168.
- NARA, 7062935, Fragebogen Files Relating to Denazification, 1945–1948, Container 53 Dossier 177.
- NARA, 7062935, Fragebogen Files Relating to Denazification, 1945–1948, Container 85 Dossier 9.
- NARA, 7062935, Fragebogen Files Relating to Denazification, 1945–1948, Container 92 Dossier 347.
- TROILO, Ferdinand von, *Orientalische Reise-Beschreibung, wie dieselbe aus Teutschland über Venedig, durch das Königreich Cypern, nach dem gelobten Lande ... von dannen in Egypten ... und vielen andern entlegnen Morgenländischen Orten mehr ... vollbracht*, Dresden 1676.

Literature

- AALBERS, Manuel, *The financialization of housing. A political economy approach*, London/ New York 2016.
- AVELINE-DUBACH, Natacha, The financialization of real estate in megacities and its variegated trajectories in East Asia, in: André Sørensen/Danielle Labbé (eds.), *Handbook of Megacities and Megacity-regions*, Northampton 2020, 395–410.
- BAUM, Andrew/CROSBY, Neil, *Property investment appraisal*, London 1988.

- BRONFMAN, Alejandra M., *Measures of Equality: Social Science, Citizenship, and Race in Cuba, 1902–1940*, Chapel Hill 2004.
- CARRERA, Magali M., *Imagining Identity in New Spain. Race, Lineage, and the Colonial Body in Portraiture and Casta Paintings*, Austin 2003.
- DUDEN, Barbara, *The Woman Beneath the Skin. A Doctor's Patients in Eighteenth-Century Germany*, Harvard 1991.
- EARLE, Rebecca, *The Body of the Conquistador. Food, Race and the Colonial Experience in Spanish America, 1492–1700*, Cambridge 2012.
- EPPEL, Angelika/FLÜCHTER, Antje/MÜLLER, Thomas, *Praktiken des Vergleichens: Modi und Formationen. Ein Bericht von unterwegs. Workingpaper des SFB 1288 No. 6*, Bielefeld 2020 [https://doi.org/10.4119/unibi/2943010].
- ENGELN, Ewald, The Case for Financialization, in: *Competition & Change* 12 (2/2008), 111–119.
- GERARDY, Theo, *Praxis der Grundstücksbewertung*, München 1971.
- GERARDY, Theo, *Praxis der Grundstücksbewertung* (3., neu bearb. u. erw. Aufl.), München 1980.
- GRIFFITH, William E., Denazification in the United States Zone of Germany, in: *The Annals of the American Academy of Political and Social Science* 267 (1950), 68–76.
- JANNIDIS, Fotis, Grundlagen der Datenmodellierung, in: Fotis Jannidis/Hubertus Kohle/Malte Rehbein (eds.), *Digital Humanities. Eine Einführung*, Stuttgart 2017, 99–108.
- JUNKER, Thomas, Blumenbach's theory of human races and the natural unity of humankind, in: Nicolas Rupke/Gerhart Lauer (eds.), *Johann Friedrich Blumenbach. Race und Natural History. 1750–1850*, New York 2018, 96–112.
- KEUNECKE, Klaus P., *Immobilienbewertung: Entscheidungsorientierte Ansätze bei der Grundstücks- und Gebäudebewertung*, Berlin/Heidelberg 1994.
- LÄSSIG, Simone, Digital History, in: *Geschichte und Gesellschaft* 47 (2021), 5–34.
- LEBAU, Hanne, *Entnazifizierungsgeschichten. Die Auseinandersetzung mit der eigenen NS-Vergangenheit in der frühen Nachkriegszeit*, Göttingen 2020.
- MACKENZIE, Donald, *An Engine, Not a Camera. How Financial Models Shape Markets*, London 2006.
- MACKENZIE, Donald, The Big Bad Wolf and the Rational Market. Portfolio Insurance, the 1987 Crash and the Performativity of Economics, in: *Economy and Society* 33 (3/2004), 303–334.
- MONTGOMERIE, Johnna/WILLIAMS, Karel, Financialised Capitalism. After the Crisis and Beyond Neoliberalism, in: *Competition & Change* 13 (2/2009), 99–107.
- MORGAN, Mary S., *The World in the Model. How Economists Work and Think*, Cambridge 2012.
- MÜLLER, Viktor-Hermann, Die Bewertung von Immobilien: Verfahrensweisen, quantitative und qualitative Methoden, in: Marlies Brunner (eds.), *Geldanlage mit Immobilien*, Wiesbaden 1994, 267–87.

- NEUBERT, Anna/SCHWANDT, Silke, Comparing in the Digital Age. The Transformation of Practices, in: Angelika Epple/Walter Erhart/Johannes Grave (eds.), *Practices of Comparing. Towards a new Understanding of a Fundamental Human Practices*, Bielefeld 2020, 378–399.
- NIETHAMMER, Lutz, *Die Mitläuferfabrik. Die Entnazifizierung am Beispiel Bayerns*, Berlin 1982.
- PATRICK, Michael, What Use is Property Performance Analysis, in: *Journal of Valuation* 2 (2/1984), 137–141.
- POHNERT, Fritz, *Kreditwirtschaftliche Wertermittlung. Typische und atypische Beispiele der Immobilienbewertung* (4. Aufl.), Wiesbaden 1992.
- POHNERT, Fritz, *Kreditwirtschaftliche Wertermittlung: Typische und Atypische Beispiele der Immobilienbewertung*, Wiesbaden 1981.
- RAPP, Andrea, Manuelle und automatische Annotationen, in: Fotis Jannidis/Hubertus Kohle/Malte Rehbein (eds.), *DIGITAL HUMANITIES: Eine Einführung*, Stuttgart 2017, 253–262.
- RAUCH, Stefanie, Good Bets, Bad Bets and Dark Horses: Allied Intelligence Officers' Encounters with German Civilians, 1944–1945, in: *Central European History* 53 (1/2020), 120–145.
- RICS, *Commercial Investment Property. Valuation Methods. An Information Paper*, London 1997.
- SATTLER, Friederike, *Der Pfandbrief 1769–2019: von der preussischen Finanzinnovation zur Covered Bond Benchmark*, Stuttgart 2019.
- STEINMETZ, Willibald (ed.), *The Force of Comparison: A New Perspective on Modern European History and the Contemporary World* (New German Historical Perspectives, 11), New York/Oxford 2019.
- SCHÖCH, Christof, Big? Smart? Clean? Messy? Data in the Humanities, in: *Journal of Digital Humanities* 2 (2013), 2–13.
- WENGER, Etienne, *Communities of Practice. Learning, Meaning, and Identity*, Cambridge 1999.

