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The Online Dating Market: Theoretical and Methodological Considerations

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Introduction

The internet and the social web have cemented their position as an integral part of our everyday lives. While no longer unusual for many purposes, such as acquiring information, communicating, or shopping online, searching for a partner on the web still seems to constitute a particular challenge for the modern Western conception of mating and intimacy, which is grounded in ideas of romantic love, spontaneity, and "destiny." Nevertheless, finding a partner online is a significant phenomenon in quantitative terms today; online dating and matchmaking services are used by a great number of people around the world, as multiple international studies have shown (see Hogan et al. 2011; Ben-Zeev 2004; Schmitz et al. 2011). It comes, then, as no surprise that scientists invest considerable time and effort in analyzing this modern social and technological manifestation of intimacy, love, relationships and marriage, which are of "perennial" interest.

The increasing social relevance of this modern phenomenon can be illustrated by subjective observations, for example, by examining the intensive advertising and media coverage of this topic, or simply by personal experience in one's own social circle. Reliable indicators are more difficult to find, but structural indicators, which may be interpreted against the background of increasing individualization and technologization, point to the emergence of a sizable online market, and to a substantial number of potential users of online dating. In Germany in 2010, 43 percent of all households were single-person households (Federal Statistical Office), and estimates suggest that 76 percent of the adult population are internet users (ARD-ZDF-Online-Studie 2012). As the social phenomenon of online dating is essentially institutionalized by private corporations, no official data on actual usage, diffusion, and market volume are available. Numbers such as revenues of USD 932 million in the United States, and USD 4 billion

worldwide (Blossfeld and Schmitz 2011) provide a rough estimate of economic activity in this market, although they may be somewhat exaggerated for marketing purposes. A private research group collected comprehensive data on the German dating market and indicated a growth in revenue from 21.5 million euros in 2003 to 202.8 million euros in 2011 (Moucha et al. 2012). Rosenfeld and Thomas (2012) use a representative survey to demonstrate that, in the United States, online dating is the dating market that has most increased in size. Schmitz et al. (2011) show on the basis of a German offline survey¹ that about 9 percent of all couples consisting of people born between 1990 and 1994 report that they met their partner online. Both Schmitz et al. (2011) and Rosenfeld and Thomas (2012) demonstrate that traditional dating markets are losing relative importance.

International comparisons are even more difficult to find. Using web survey data, Hogan et al. (2012: 14) found that Germany had the highest percentage (29 percent) of couples that met online, compared with other European countries and Japan. Due to selective participation in online surveys, especially in this context (Zillman et al. 2013), the estimate of 29 percent should be seen more as an indicator of the maximum, and less as a true population parameter, although other analyses also point towards an increase in couple formation via the internet.

On this evidence of its economic and social market relevance, it comes as no surprise that the online dating market itself is highly differentiated. Two important forms of digital dating, and two associated and different business models exist in the online dating market. The first form is called simply "online dating," and involves searching for a potential partner on one's own initiative; users register with a dating site, which may or may not be free of charge. As part of the registration process he or she provides personal information, namely socio-demographic details (for example, sex, age, height, weight) and the desired characteristics of a potential mate (for example, geographic distance, minimal requirements of age and education, and so on). This information is then presented in the user's profile, a visual overview for other users. From that point on, a user can participate actively and passively

on this platform; this involves browsing for subjectively relevant parameters and contacting other users via short messages or a chat system. In the case of a successful contact, messages are exchanged until the interaction ends or intensifies in the form of a change of communication medium, including email, telephone, and face-to-face encounters.

The second model comprises a “matchmaking system” offered by a provider; the registration process is essentially the same as in the first case, but as part of the business model, the information collected from the users is more comprehensive and obligatory. The core of this additional information often consists of questions regarding the applicant’s personality and lifestyle. A matching system then calculates a one-dimensional factor (for example between 0 and 100) based on this information in order to suggest a potentially suitable partner. The guiding principle behind this matching factor is the similarity of the two participants – generally the greater the better – taking stated or assumed dissimilarities into consideration (for example, men are not matched with men unless that is a specified preference). Between these two kinds of business models numerous mixed forms exist. This differentiation in the market can be interpreted in terms of business models responding to different categories of users’ mating dispositions.

Characteristics of online dating

Before using an internet dating site, users have to provide personal information in a series of categories and enter this information into a standardized registration questionnaire. This information consists, on one hand, of socio-demographical attributes like age, gender, religion, lifestyle, education, and career, and on the other hand of physical characteristics, such as height, weight, and hair and eye color. Additionally, profile categories cover information such as whether a user smokes, has children, or has previously been married. Finally, users are able to compose texts of their own, which might directly address potential partners, or further describe themselves and the characteristics they are looking for – or perhaps wish to avoid – in a partner. Through use of all these profile options, a user can portray and position themselves on the partner market, in this case the dating site itself.

See Appendix, Figure 1: Idealized process of dating site usage

After registration and self-portrayal via profile generation, a user may search for a partner or wait for a contact, usually by means of a personalized email message or a standardized greeting. An ideal-typical interaction process would develop in the following manner (see Figure 1): Further exchange of messages – Chat within the platform – Chat outside of the platform (for example, Skype or Facebook) – Exchange of email address – Exchange of telephone number – Face-to-face meeting – Offline continuation.

Online dating – an ‘ideal type’ partner market

In the following section, an ideal-typical comparison of online dating with dating in other social contexts will be conducted, contexts which can be and actually are perceived as partner markets in the scientific and public discourse. It will be argued that online dating is a social context of encounter in which the use of the term “partner market” is particularly appropriate.

What do terms such as “partner market” or “marriage market” mean? Surprisingly, this self-evident question is rarely asked. The term “partner market” lacks an exact theoretical conceptualization. Usually, no explicit definitions are given in the research literature and the usage of the term “market” is essentially metaphorical. The term “mating market” generally refers to a confined field of social interactions (such as a university or a nightclub) in which mating goals are pursued to a finite degree. However, from a theoretical point of view, such implicit definitions are not satisfactory and, as we will see, not strictly conclusive for empirical work either. This conceptual deficit can encourage ad hoc postulates, such as the equation of the components of an individual’s mate value (for example, education) with “mate value” itself, which may also contribute to generalization of the determinants of success chances, preferences, strategies, and so on.

A sociological conceptualization of markets can be found in the works of the early sociological giants Max Weber and Georg Simmel. As Weber (1992) puts it: “A market may be said to exist wherever there is competition, even if only unilateral, for opportunities of exchange among a plurality of potential parties.”² Simmel (1908) gives a similar definition: “At least three actors are necessary for a market to exist: at least one actor on one side of the market confronted with at least two actors on the other side, whose offers the first actor is able to compare with one another.”³ This perspective highlights that not only specif-

ic partner traits actually exchanged have to be understood as the object of competition but, more importantly, the potential chances of exchange themselves. Furthermore, a “mating market” can be characterized by an antecedent competition for attention chances (Schmitz 2009). “Mate value” can therefore be defined as the relative chance for attention and exchange in a competitive environment with mating goals. This approach also conceptualizes “mate value” via non-realized exchange: the “price” of an actor on the partner market is a function of actively and passively approved and rejected offers.

According to Weber’s well-known definition of power, we can understand exchange chances in markets to be a function of power relations, whose origin might lie inside or outside the particular market itself. This approach highlights the relevance of the sociological category of power structures in mating markets, a category that is neglected in both traditional economic market conceptions and empirical sociology. The definition analytically separates the concept of mate value from a particular variable or characteristic. In doing so, the specific components of an individual’s chance structure are opened conceptually for different mechanisms, whereas equating mate value with only one particular variable (education, attractiveness) might, conversely, conceal more than it reveals. Assuming, for example, that education is the primary determinant of mating success disguises the gender-specific relevance of education, as well as its context-specific relevance. Emphasizing the importance of relations in and for the market leads to an appreciation of the fact that a partner market should be understood as a structure of chances which cannot be reduced to general prevailing traits, as a partner market implies no uniform exchange entity (in contrast to money in a financial market, for example).

With reference to this Weberian definition of a partner market one can also infer the central differentiating dimension of social contexts in which couples are established. The term “partner market” can be applied to the extent to which mate search and competition for exchange opportunities with potential partners actually structure practices in this context (and are thus constitutive of the processes of the particular social context itself). The question arises as to whether the prevailing practices of couple formation in a specific context can be thought of as “*relatively autonomous*” (Bourdieu 1992: 69) from other sections of society. Two core expressions of the relative autonomy of a market are (a) the high level of specificity of the objects of interest being competed for (money in a

financial market, for instance), and (b) the level of irrelevance of the society outside the market for the agency *within* the market. In other words: the more explicit the good in question is, and the less competition for opportunities of exchange is influenced by societal guidelines, the closer a social sphere is to what theory means by a “market.” Taking these aspects into consideration, the object of online dating, when compared with offline dating, exhibits an especially high level of relative autonomy.

Unlike offline partner markets (Stauder 2008), and unlike other online social media, the explicit function of online dating agencies is to enable the formation of couples. The primary meaning behind the use of a dating site is clearly to find a partner, whereas, in other contexts of interaction such as the workplace or school, couple formation is for the most part an unintended side-effect of context-specific practice. Applying a conception of the market based around its goods, online dating – compared with traditional contexts of interaction – appears to be oriented towards *a good which is relatively explicit and universal*, as supply and demand in this context are clearly defined by partners or relationships, respectively.

Further developing Feld’s “focus” theory (Feld 1981), online dating as an interaction context can be considered to be a *hyper-focus*, different from other foci due to the explicit nature of the mate search process, representing the very purpose of the interaction. Unlike traditional foci, which are frequented mainly by socially homogeneous groups (such as nightclubs), the hyper-focus of online dating is characterized by a high level of socio-structural heterogeneity, or a low level of market imbalance (meaning that no particular strata are extremely over- or underrepresented).

Skopek (2011) shows how the marginal distributions of a large German dating site more or less correspond to Germany’s social structure as a whole.⁴ In this regard, online dating resembles online matchmaking (that is, the algorithm-driven system of partner suggestions offered by certain companies), where specific social groups may be over-represented, but all users of all social classes are still easily accessible using the search function. Both virtual partner markets are thus characterized by comparably low transaction costs (that is, search costs), and thus by a high operational market efficiency. This also implies a relatively low uncertainty regarding the intentions of the market participants: usually, both interaction partners using an online dating site will be looking for a long- or short-term

relationship, whereas this is not certain in the context of a university or workplace.

The relative reduction of uncertainty regarding the intentions of a potential partner in online dating is, however, relativized by the relatively high level of uncertainty regarding the *authenticity* of a communication partner; as is the case for speed dating or offline dating agencies, the two interacting users on a dating site are unlikely to know each other personally, and are thus mutually *anonymous*. The relatively high efficiency of online dating compared with traditional partner markets is therefore relativized by the situation of computer-mediated communication. Compared with traditional contexts of encounter, users of online dating sites can exercise extraordinary control over their self-presentation, in the form of their profile pages and in further communication. The profile architecture of dating sites enables a repertoire of deception, ranging from minor concealments to the complete falsification of profile data. Online dating can thus be characterized by the relatively low necessity for truthful information in personal profiles (see, for example, Ellison et al. 2006; Hancock et al. 2007). The concomitant risk of profile deception is thus relatively high, a fact that distinguishes online dating from other contexts by way of a particularly high level of initial uncertainty. In computer-mediated communication it is initially unclear whether one's communication partner actually is who they claim to be. Further complicating the matter is the fact that, unlike, for example, the family context of offline couple formation, there is no formal or informal instance of social control and sanction, which would prevent or inhibit deceptive practices.

Consequently, online dating can also be thought of as relatively autonomous with regard to structure: the process of couple formation on online dating sites occurs in dyadic exclusivity; that is, *without the direct involvement of third parties or other users of social networks*. The paradigmatic inverse of this context might be marriages arranged by the families of the two partners, or – more recently – Facebook's 'Spotted' groups, which mobilize users' social networks to establish contacts with potential partners.⁵ The detachment from everyday social structures of interaction so characteristic of online dating does not simply affect each single interaction, but all subsequent interactions as well: whereas two people whose interaction did not lead to a relationship might still come into contact with one another in typical offline interaction contexts such as the workplace or school, in online dating (much like online matchmaking and perhaps offline markets such as night-

clubs) the chances of further interaction are low. The "shadow of the future" (Axelrod 1984: 124) is thus particularly insignificant for virtual encounters (see, for example, Diekmann and Wyder 2002: 674f.). This relieves online dating users of the necessity of considering the long-term social relationship with each potential interaction partner. Termination of communication, perhaps simply by not replying to an individual message, is considerably less burdened with normative considerations than in the social contexts of the family, school, or workplace. However, once a particular couple is established in the online partner market, it then leaves the market, so that the partners will not usually continue to be available on the partner market (Stauder 2006) and no longer immediately influence market processes – another indicator of the relative autonomy of online dating from offline social structures.

In the face of this comparatively high level of relative autonomy – in the sense of homogeneous intentions and goods, on one hand, and the irrelevance of personal networks, on the other – online dating can be justifiably ascribed the core characteristics of a market. This autonomy may also be responsible for the relatively low prevalence of online dating: whereas the family, school, social circles, and the workplace represent more typical and long-term contexts of social encounter, online dating is distinguished by its more deliberate but also temporary usage patterns.

The recourse to concepts of market theories is also applicable with regard to the interaction processes in this relatively autonomous partner market. Working from an exchange-theoretical perspective on partner market research (Thibaut and Kelly 1959; Blau 1964), which approaches the establishment of relationships as a process of giving and receiving, the interactions on dating websites can be thought of as representing a medium providing a particularly "impersonal market exchange" (Weber 1978: 641). The digital partner market is, more than other partner markets, distinguished by "considerations for things, not [...] for persons" (ibid.), which means that online dating is less about contacting, or selecting persons, but rather perceived combinations of formal and stylized attributes (Lenton and Stewart 2008; Zillmann et al. 2011), based on comparisons of multiple alternative user profiles.

The technical design of dating sites is such that users' self-presentation is limited to modular options in various attributes, excluding standard offline forms of self-presentation such as facial expressions, the involvement of third parties, or the use of material objects. Along with the social con-

ventions governing self-presentation (users are expected to present themselves as being “interesting,” “respectable,” or “sporty,” and so on),⁶ online dating actually standardizes its users, forming a relatively homogeneous, stylized and structured mass of “suppliers,” who present themselves to other users in the form of choice sets, from which a selection has to be made.

Evidently, third parties also play a core role for the partner market processes, including the users’ individual outcomes, as well as the consequences on the market level; within a dyadic interaction, they are present as competing market participants and promising alternatives. Due to the abundance of potentially *available* partners and competitors, and thus the *size of the market*⁷ in general, online dating can be thought of as being particularly strongly structured by competition.

Within this *polypolistic* market more than two users are thus always indirectly involved in any specific dyadic interaction as alternative partners and competitors. This extreme level of market competition manifests itself in particular in *competition for attention* among users (Schmitz 2009), especially in the form of the verbal and visual content of the user’s profiles. Whereas more long-term and structurally conditioned interactions – at school or work, for instance – also allow for “love at second sight,” online dating users are forced to approach the surplus of potential partners in a manner which reduces complexity.

Given the low degree of physical and temporal co-presence, symbolic (in the profile design) and verbal (in the chat process) stimuli are the units of complexity reduction, which, together with the anonymity of encounter, enhance the degree of personal information, allowing the comparison of “tastes,” “family backgrounds,” and “hopes and dreams” (Burrell 2004).

The comparatively low levels of co-presence allow users to, at first, ignore physical distance and to communicate in a time-displaced way, which further favors simultaneous interaction with multiple partners. Unlike in traditional offline dating, the parallelity of interactions is less subject to normative expectations (for example, by the circle of acquaintances) and to a postulate of romantic exclusivity.

Users are frequently either inundated with incoming contacts, forcing them to apply selective practices of choice, or in the inverse case of too little attention, resulting in rationalist reflection on the self (Schmitz et al. 2011). Dating

sites’ very design induces such reflection on one’s own romantic preferences and potential (initially, for example, via filling out one’s profile) and a rationalizing approach to the self (for example, one’s “market value”), as well as to potential partners, resulting in a prevalent search for “the best bargain” (Illouz and Finkelmann 2009: 416), in accordance with the “principle of maximization” (Klein und Stauder 2008: 82, own translation) which fosters practices similar to market axiomatics. From a market perspective, online dating can thus be taken to be relatively *efficient*: users looking for a partner and possessing comparatively clear intentions, prone to apply cost-benefit calculations, are brought together without a great deal of interference from market-exogenous rationalities. The fact that users enter the digital partner market not just with the expectation of realizing their own preferences, but with the expectation of rational expectations on the part of other market participants, further encourages this purely instrumental rationality; independent of whether a particular user is genuinely predisposed to act rationally as part of the process of online dating, he or she will be clearly aware of, or will at least assume, utility-maximization strategies on the part of the other users.

The great potential, and indeed necessity, for inauthentic self-presentation becomes one of many rational strategies used in online dating, and intensifies the market competition, because most users will optimize their profiles according to their expectations of the desires of the other market participants, so as not to suffer any competitive disadvantage (Zillmann et al. 2011). The detection of possible deceptions also becomes of considerable importance in online dating: any potential partner automatically comes under suspicion, and must be unmasked quickly in order to avoid misallocation of one’s time and attention. Just as in the fundamental axioms of rational action theories in general and the MAS in particular, a user must reflect upon the expected utility of each contact event: the fact, for instance, that a man’s profile exhibits a subjectively ideal height must be considered in the context of the probability that this particular attribute is actually true. The user is driven, therefore, to set the value of a potential partner’s attributes against the likelihood of their veracity. Computer-mediated communication in online dating, which enables a relatively high level of control over the consistency and plausibility of a user’s self-portrayal, also fosters rational strategies of action in profile data and in the exchange of text messages. Normally, the process of interaction between two users is constantly accessible for both users; undertaking plausibility checks is a valid rational

strategy for users (Gibbs et al. 2011). The technical and social conditions of online dating as described here can, in summary, be thought of as representing a kind of partner market that generates a specific induction of rationality (Illouz and Finkelmann 2009: 415) on the level of the subject, and a particular logic of supply and demand on the market level.

Another theoretical perspective justifies the application of market terminology in the online dating context: because of the widespread fear of deception and dishonesty, and because of the unromantic image of this manner of meeting and interacting with potential partners, the initiation of relationships online is considered to be comparatively “illegitimate” and its specific market character is often interpreted from a particular culturally pessimistic (see, for example, Illouz 2007) or even pathologizing perspective (Hakim 2012). Frequently, couple formation online is taken to represent further evidence of the commercialization of love and the self in our modern consumer society (Dröge and Voirol 2011). Illouz and Finkelmann’s socio-critical perspective leads them to the conclusion that, before the rise of the internet, the very term “market” was “largely inadequate” (2009: 409) for the conceptualization of the processes of couple formation. Thus, it is not only partner market theory, but also socio-critical perspectives that perceive online dating as an especially market-structured context of interaction.

In sum, according to various dimensions, online dating represents a partner market that is strongly structured by competition and instrumental rationality in the mate search process. For the purpose of summarizing and consolidating these arguments, Figure 2 presents a graphical visualization in the form of ideal-typical biplots (Gower et al. 2010).⁸

See Appendix, Figure 2: Theoretical comparison of ideal-typical partner markets (biplots)

In accordance with the ideal-typical approach outlined here, the traditional contexts of encounter are to be found on the left-hand side of the diagram. They share the commonality of being a strongly socially structured partner market, characterized by a direct involvement of third parties and institutionalized contexts of encounter.

The online dating partner market is located on the right-hand side of the ideal-typical diagram, and displays some similarities to speed dating, online matchmaking, offline dating agencies, and romantic advertisements. These con-

texts of encounter are explicit entities of partner mediation, unlike, for example, the workplace or school. Furthermore, online dating differs from these contexts by way of its exceptional levels of competition and its attribute-driven process of selection. Speed dating differs here, thanks to the manageable number of participants involved, by way of a considerably more person-oriented process of selection and less intense competition. Online dating differs from online matchmaking in the fact that the market’s size and levels of availability, which initially appear similar, are limited by the matchmaking algorithm, resulting in a smaller “field of eligibles” in the digital matchmaking market. Online dating also displays proximity to an ideal-typical night club and to Facebook’s “Spotted” function. Interactions in a night club are also characterized by the disproportionately high presence of potentially “romantic” intentions, such as flirting, and by relatively high levels of competition for attention, anonymity, and attribute-oriented selection (see, for example, Otte 2007). Online dating can, in fact, be thought of as a particularly extreme form of this traditionally relevant mating context. The “Spotted” groups on Facebook share with online dating the fact that they are both explicit and online forms of mate search. The key difference between online dating and “Spotted,” however, is the practically absent competition in the latter case, and its strong embedding in social (network) structures.

This ideal-typical approach is in no way intended to deny the empirical differences between different dating sites or different offline contexts; this idealized representation is intended solely to demonstrate a core aspect of the research perspective of this work, which can be stated in two theses:

(1) Online dating sites are not exceptional phenomena in the context of couple formation, but can be located within an analytical continuum alongside conventional partner markets.

(2) Online dating sites seem to be, in comparison with other contexts of interaction, strongly structured by market logics.

In light of these considerations, one can conclude that online dating represents a social sphere which comes closest to what sociologists label a “partner market.” In the next section we shall argue that, for economic sociologists, online dating also constitutes an “ideal market” from a methodological viewpoint.

Observational data from the online dating market

The objectivity of the market, which is often hard to grasp using a traditional questionnaire-based sociology (cf. Schmitz et al. 2009), can be constructed by means of the objective chance structure also enabling the (a) observation of acts of mate choice, and thus the (b) emergence of couples over the course of time, (c) including the available alternatives, which is impossible when using questionnaire data.

However, in online partner markets there is a raft of observational data that do not yet quite belong to the standard repertoire of the empirical social sciences, and hence require some explanation. The operationalization of data of this type is usually undertaken with the help of a server-based script language, such as PHP, which can upload relevant information from a relational database (for example, MySQL) to the user's browser dynamically. Interactions between the users themselves are also considered to be site-relevant content, and are consequently also tabulated within the database. This process has the great advantage that, simply by virtue of the technology at work in a dynamic website's data storage, event data can be accessed in a clearly structured form, allowing the data to be registered and processed in real time.

Thanks to the automated compilation of the data, and their storage within a pre-defined structure, it is relatively straightforward to configure the data into the standard data structure ("flat file") for analysis with statistical software. To this end, the platform's operator can export the data in anonymized form, for example as an SQL file. SQL is a programming language for creating and handling relational databases. The exported files are first re-imported to a local database; the tables' structure remains identical to that found in the original database. SQL commands are then used to collate the tables so that all relevant data for a specific purpose can be displayed in one table. This final table can be exported as a CSV file and uploaded into a statistical software program. The process, from the operator database to the flat file, is depicted in Figure 3.

See Appendix, Figure 3: Idealized process of dating site usage

The database extractions were made available to us by the dating service provider – henceforth "the provider" – at regular intervals, approximately every six months.⁹ The data were anonymized as SQL files, a procedure overseen

by the data protection agent of the provider. In order to convert the data into a format readable by standard statistical software, the files first had to be uploaded incompletely to a MySQL database, and then exported in STATA and SPSS as CSV files for further analysis. In consultation with the provider's technical experts, code books for the process data were also created. As part of this project, a database was also created with process data comprising profile and interaction data for the years 2004 through 2010 (final database dump 14.4.2010).

Table 1 (see appendix) gives an ideal-typical overview of the dyadic nature of the recorded data. The observational data recorded in online dating contain "revealed" partner preferences, by logging contacts, and dyadic developments, by logging interactions. Typically, users explore the profile database of the site, viewing other users' profiles and, upon finding another user who appeals to them, will try to get in contact using a messaging function common to most dating sites. This kind of relational data, combined with the user profiles, allows for a detailed temporal reconstruction of the process of contact formation and interaction between potential mates on an observational level. For instance, it is possible to retrace which other user profiles a given user looked at, and which profiles he or she subsequently chose to contact via email. Figure 1 presents an example where a sender (IDS) contacted a respondent (IDR) on a specific date (Time). After a certain time had elapsed, the respondent sent a message as a reaction to the sender's initial contact.

This relational data structure enables researchers to depict the structure and processes of the partner market, including the observation of "revealed preferences" (Skopek et al. 2011), the construction of a user's opportunity structure (see below), the "reciprocal classification" (Schmitz 2012) of two users, but also the analyses of response behavior, for example the pattern of item-non-response of the profile mask or of unit non-response in surveys presented on the platform (Zillmann et al. 2012). The next section will give an example of how to use such data, which is of a new kind, for the assessment of traditional problems in partner market sociology, using "mate value" as a core issue of the market perspective.

See Appendix Table 1: Examples of HTTP status messages

Modelling the user's mate value

Given the absence of alternatives, partner market research was for a long time forced to operationalize actors' chances via available information on education, income or attractiveness. However, apart from spontaneous constructions derived from ad hoc definitions, some attempts at an empirical construction of mate value can be found in the literature. Pawloski and Dunbar (1999) calculated a mate value for each cohort by dividing the proportion of advertisers seeking individuals of a given age (the demand for individuals of that age) by the proportion of advertisers of that age in a sample (the supply side). The ratio of these two becomes a measure of the relative selection pressure placed on individual age cohorts, in the same sense that selection ratios are used in population ecology. Some authors propose surveying self-perceived mate value of an actor as a measure (Brase and Guy 2004). Gigerenzer and Todd (1999: 291ff.) discuss the allocation of "offers and rejections" as an adaptive heuristic for learning one's own mate value. That would first mean counting possible romantic partners. However, as already mentioned, actors searching for a mate will also consider the mate value of the potential mate. The sheer number of offers from potential mates is simply too vague a measure, as the offering alteri themselves may well vary in their mate value. I call this the "Cocotte problem": Contacts from actors with a low market value are worth less than contacts from actors with a high market value. Consequently, a Weberian mate value of ego shall be conceptualized as a function of the quality and quantity of his or her contact network and thus mate value becomes a function of the actor's (ego's) network. This can be illustrated with a simplified ingoing contact graph:

The amount of incoming contacts increases ego's (dark) mate value. A higher alter mate value stemming from a high number of ingoing contacts results in a higher mate value for ego. The increase of ego's mate value declines relative to alter's outgoing contacts. To put it in layman's terms: it is good for one's mating chances to get a lot of offers; it is even better if the offers are from potential mates who also have good mating chances; and, finally, the more exclusive the attention that ego gets from alter, the better it is for ego's mating chances.

The eigenvector centrality indicator "rank or status prestige" fits with this methodological consideration, as this network measure is a function of the rank or status of actors in a network (Bonacich 1987). For example, a man

who is contacted by many high-ranked women has a higher rank, and thus a higher centrality measure, than a man who is the target exclusively of low-ranked women. A user's rank therefore increases every time he or she is contacted, but it increases more the higher the rank of the choosing partner. This "mate prestige" indicator (MP) can be formulated as follows:

$$MP_{IN}(A) = (1 - d) + d \cdot \sum_{i=1}^n \frac{MP_{IN}(T_i)}{C_{IN}(T_i)}$$

With

$MP_{IN}(A)$ the mate prestige value of individual A

$MP_{IN}(T^i)$ the mate prestige of individuals T^i , which contacted A

$C_{IN}(T^i)$ the total number of contacts, that were established by T^i
d a damping factor between 0 and 1

Hence, ego's prestige is a function of the ranks of the actors that contact ego. The computation implies an iterative optimization problem that can be solved with an eigenvector-centrality algorithm.¹⁰

The new structure and the specific context of online dating should not discourage researchers from testing traditional (for example, effect of women's BMI) or new hypotheses (effect of a profile picture in online dating) in an individualistic framework, as the following example shows. Table 3 reports an OLS-regression model of the mate value indicator. The logarithmized centrality index is explained using gender (squared), age (squared), an ordinal indicator of education and three gender-specific interaction terms (age, BMI, education) as well as the presence of a profile picture (yes/no). The regression model shows that, on average, women show a more advantageous chance structure than men. Furthermore, age positively affects the average chance structure. However, it operates in a curvilinear manner, so that after an optimal age the mate value declines. For both sexes higher education and presence of profile picture positively affect the chances of being contacted. In accordance with offline findings, the interaction terms show that the female chance structure becomes worse with older age and higher BMI. Additionally, however, higher education impairs female chance structure.

See Appendix, Table 2: Explanatory model of users' mate value

Using this example, the analytical potential of the observational data is illustrated. In contrast to one common way of understanding information regarding objective or subjective mate value, the observed interactional data allow the chance structure to be objectified as such and the impact of the indicators on objective chances is illustrated. For example, education seems to be less relevant for centrality in the contact network than, say, age or physical appearance (measured here by BMI and profile picture). One can state (in contrast to euphoric expectations regarding the dissolution of social distances by the internet) that dating sites produce differential awareness chances, and thus differential exchange chances for its users.

Conclusion

Descriptions of the modern phenomenon of “online dating” range from a digital “passion killer par excellence” (Žižek 2010), which promotes “emotional capitalism” (Illouz 2007: 5) to a “promising means of improving societal levels of romantic well-being” (Finkel et al. 2012: 49), which “provides a unique environment for people to experience and learn about relationships and sexuality” Whitty (2008: 1837). In contrast to such generalizing utopic and dystopic reflections on possible impacts for the modern subject, we should primarily see online dating as a means (a) to answer long-standing questions regarding the socio-structural character of mating by utilizing a new kind of data which was unavailable for partner market research and (b) to observe the structural mechanisms operating on an actual partner market. The online dating market can be understood as a social field, which constitutes a part of modern partner market research, as the basic mechanisms of partner markets are not of a qualitatively new nature in the online environment. Economic sociology may profit from this research setting as both the operation of market mechanisms (such as competition) and their socio-structural and cultural embedding can be observed in an almost “ideal-type” way. Given this insight and the structure and amount of data available in research settings of this kind, a plethora of market-related questions can be assessed, starting from mate preference adaptations (Skopek et al. 2011) over the emergence of dyadic constellations (Schmitz 2012) to deception in mating (Zillmann et al. 2011). Furthermore, the classical distinction between “online” and “offline” dating is only an analytical one and may become increasingly blurred due to the practice of actors using social networking sites. Users may encounter a potential mate offline and use a social network as an opportunity for a second contact, for example. Accordingly,

one can assume that a certain number of respondents will interpret sites such as Facebook as a natural feature of their friendship network. Given this potential for partner market research, one also might expect that future findings might have a positive impact on theory development itself.

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Endnotes

1The data used are from the PAIRFAM survey, which is being coordinated by Bernhard Nauck, Johannes Huinink, Josef Brüderl, and Sabine Walper (see Huinink, Brüderl, Nauck, Walper, Castiglioni, and Feldhaus 2010). The panel receives long-term funding from the German Research Foundation (DFG).

2Weber (1985 [1922]: 382): “Von einem Markt soll gesprochen werden, sobald auch nur auf einer Seite eine Mehrheit von Tauschreflektanten um Tauschchancen konkurrieren”.

3Simmel (1983 [1908]: 83f.): “Die Existenz eines Marktes bedarf mindestens dreier Akteure: Mindestens ein Akteur auf der einen Seite des Marktes, der sich mindestens zwei Akteuren auf der anderen Seite des Marktes gegenüber sieht, deren Angebote er im Vergleich miteinander bewerten kann”.

4Putting the fundamentally ideal-typical characterization to one side for a moment, it seems that certain specific dating sites (for example for homosexuals or particular ethnic groups) actually represent a double hyper-focus: the congruence of intentions, on one hand, and the high level of socio-structural homogeneity, on the other.

5“Spotted” is a technology within Facebook with the following function: if a user in a certain location (usually a specific town or university) sees a person they are romantically interested in, they can post a message in the group in an attempt to mobilize the social network (both their own, that of the potential partner, and indeed of the group as a whole), with the nominally ideal end result being contact with the person in question.

6Some dating services even work to identify “sub-optimal” profiles and pictures, helping users present themselves in the “right” way.

7It is difficult to estimate the true size of online dating sites, as it is of course in the interest of the services' providers to claim to

have large numbers of customers. The website we analyzed had over 118,000 registered profiles in 2009.

8The graphic is based on a relational table in which each context was assigned an ideal-typical triple-ordinal value.

9A comprehensive overview of the process data is given in Schmitz et al. (2009).

10From a relational point of view, the latent phenomenon of mate value cannot just be represented by the quantity and quality of ego's contact network (that is, the value of the offers), but must also take into account the fact that the ego himself contacts alteri that can react to this offer in a permissive or dismissive way. I call this the "Casanova problem": Contacts from actors whose activities are more widely distributed are worth less than from those who concentrate on one person. Therefore, an important indicator of ego's mate value is the value operationalized by means of accepted and rejected offers. Again, this indicator of appeal is meaningful only when augmented with the value of those that accept or reject ego's offer.

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Appendix

Figure 1: Idealized process of dating site usage

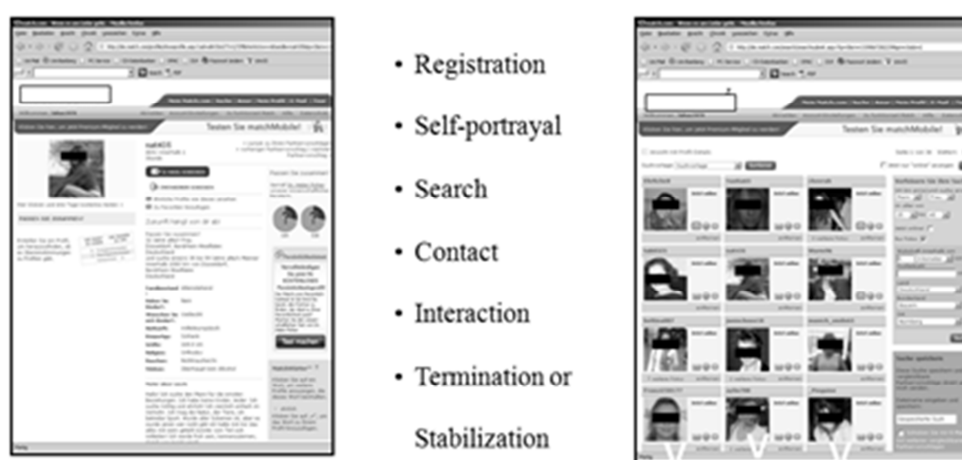


Figure 2: Theoretical comparison of ideal-typical partner markets (biplots)



[“low search costs”]

Figure 3: Idealized process of dating site usage

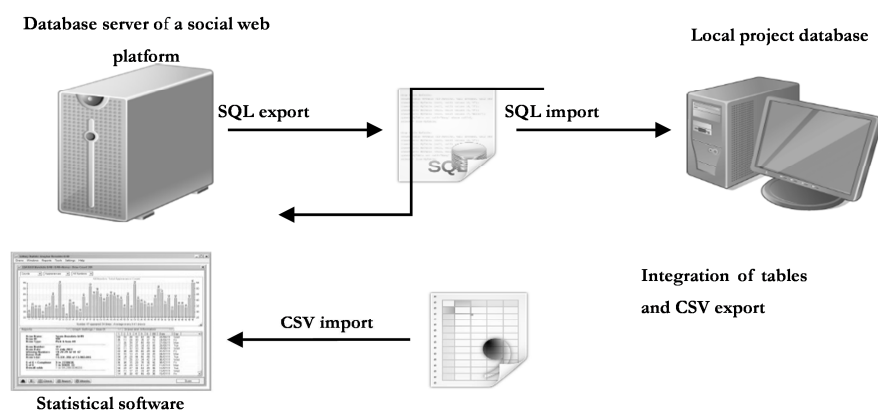


Figure 4: Ego's ingoing contact network

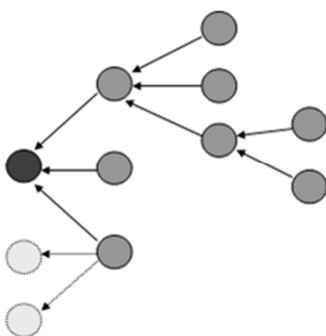


Table 1: Examples of HTTP status messages

ID S	ID R	Dyad No.	Contact No.	Mail	Time	Sex S	Sex R	Age S	Age R	Edu S	Edu E
16172	9239	5430	1	0	01.07.2012.13:15.26	M	F	45	42	Abitur	Abitur
9239	16172	5430	2	0	01.07.2012.18:42.19	F	M	42	45	Abitur	Abitur
16172	9239	5430	3	0	02.07.2012.08:33.01	M	F	45	42	Abitur	Abitur
...											
16172	9239	5430	7	1	02.07.2012.22:17.49	M	F	45	42	Abitur	Abitur

Table 2: Explanatory model of users' mate value

	B
Female	0.592***
Age	0.021***
Age (quad.)	- 0.001***
BMI	0.000
BMI (quad.)	0.001*
Education (ord.)	0.059***
Age*Female	-0.007***
BMI* Female	-0.008***
Education* Female	-0.014*
Profile Picture	0.166***
Intercept	-1.481***
adj. R ²	0.06%
N	15455

Legend: * p≤0,05; ** p≤0,01; *** p≤0,001