Drawing the Social:

Jacob Levy Moreno, Sociometry, and the Rise of Network Diagrammatics

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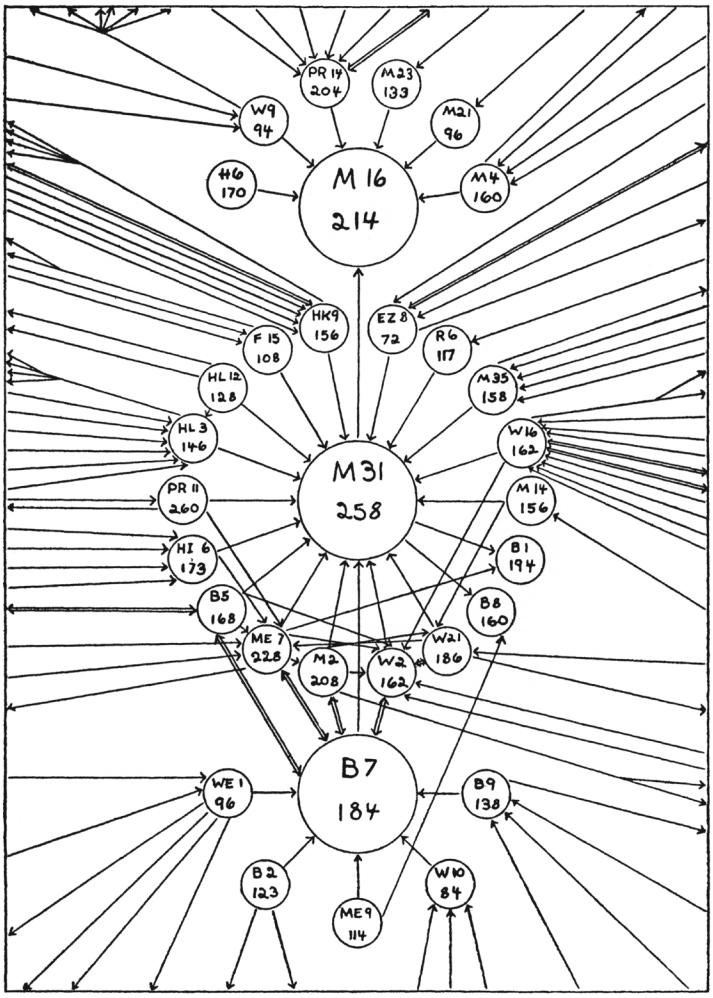

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This text was originally written for a collaborative volume: Ursula Frohne and Anne Thurmann-Jajes (ed.) *Art 'In-Formation'. Communication Aesthetics and Network Structures.* Within this pre-print publication it remains in its original form, although research on diagrammatics, the history of networking, and Moreno himself has developed further. Most notably, Moreno's son-turned-sociologist has written a popular book about him: Jonathan D. Moreno, *Impromtu Man: J. L. Moreno and the Origins of Psychodrama, Encounter Culture, and the Social Network* (New York: Bellevue Literary Press, 2014).

Drawing the Social:
Jacob Levy Moreno, Sociometry, and the Rise of Network Diagrammatics

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Abstract The following article discusses the combination of graphical methods and network thought in early sociology. It combines a case study of Jacob Levy Moreno's sociometric work and diagrammatic practice with media-theoretical thoughts about the characteristics of network diagrams. These are understood as inscriptions that perform both an act of drawing and writing at the same time. Moreno's mappings, as well as other early visual techniques of social research, are understood along Michel Serres' understanding of the network diagram as a topological narration. Seen from the vantage point of a history of knowledge, Moreno's sociometric and performative practices can not only be understood as a contribution to social network thought, but as actual research on the cooperative character of human interaction.

Keywords Jacob Levy Moreno, Sociometry, Social Networks, Diagrammatics, Visual Sociology, History of Knowledge, History of Social Research

Prelude to a Prelude

Prophetism is a rare feature to be found in the works of Michel Foucault. But when the French philosopher spoke about "other spaces" and "heterotopias" in front of an audience of architects in 1967, the historian of knowledge dared to speak about its very own time. Our own epoch, Foucault said, would be an era of space—as opposed to the time-obsessed nineteenth century. "We are in the epoch of simultaneity: we are in the epoch of juxtaposition, the epoch of the near and far, of the side-by-side, of the dispersed. We are at a moment, I believe, when our experience of the world is less that of a long life developing through time than that of a network that connects points and intersects with its own skein."[1]

Foucault's tentative prophecy was already in the process of fulfilling itself in the 1960s. In fact, poststructuralist philosophy seemed to have a keen sense for what Mark Wigley has called the media-architectural "network fever" of these years.[2] There existed a multitude of then contemporary reasons for such a wave: the passage from cybernetics to systems theory, new scientific and artistic approaches to topo-

1 Michel Foucault, "Of Other Spaces," trans. Jay Miskowiec, *Diacritics* 16, no. 1 (Spring 1986), p. 22. "Nous sommes à un moment où le monde s'éprouve du simultané, nous sommes à l'époque de la juxtaposition, à l'époque du proche et du lointain, du côte à côte, du dispersé. Nous sommes à un moment où le monde s'éprouve, je crois, moins comme une grande vie qui se développerait à travers le temps que comme un réseau qui relie des points et qui entrecroise son écheveau." Michel Foucault, "Des espaces autres," *Dits et écrits II, 1976–1988*, ed. Daniel Defert and François Ewald (Paris: Gallimard, 2001), pp. 1571–81, esp. p. 1571. Foucault did not authorize publication of the lecture prior to 1984.

2 Mark Wigley, "Network Fever," in *Grey Room* 4 (2001), pp. 82–122.

logy and relationality,[3] networks of architects in the process of building informatized network structures, early experiments in computer networking, et cetera. Unsurprisingly, the 1960s also provide us with some of the initial network studies in social anthropology.[4] These studies, however, are preceded by a strange but significant episode in the sparsely written history of networking.[5] My following sketch is therefore going to tell the story of a wild, discontinuous, intermittent love affair. It starts approximately in the 1930s, stops and flickers for a long while, but has never been more romantic than today. I speak of the seemingly irresistible erotic relation between sociology and the visual form of the network diagram. The frame of my argument will be a double interest: both in the history of knowledge and in what William Mitchell has called "diagrammatology."[6] Our story therefore unfolds in a rarely charted no-man's-land between image, writing, computation, and narration that the catchphrase "diagrammatics" hardly can grasp.

Networks In-Formation

Net diagrams are systemic pictures. They must be, because they perpetually reach the boundaries of inscription spaces. Strictly speaking, they do become network diagrams only if their nodes are representations of very heterogeneous entities.[7] Once a net consists of hybrid agents, interconnectivity and heterarchy instead of "mere" connectivity become the standard. But it is nearly impossible to make a drawing of the extendibility, aggregation, and dissolution of networks in a "solid" iconic form. Therefore, images of the social tend toward a dynamization through techniques of animation and simulation. Even the most recent forms, including the research on swarm intelligence, have to grapple with the (im-)possibilities of a topological-relational visual form that has become *the* medium of the network society itself. Moreover, while almost everyone is working on his or her very own social networks, we are constantly forgetting to think of them historically and critically. This is ever more necessary, for network diagrams establish nothing else but a measurement of sociability. Out of the microdimension of social groups emerges the macrodimension of a network society (Manuell Castells).

On a different level than his contemporary Foucault, French philosopher Michel Serres has made the diagram a focal point of his epistemology.[8] In the first pages of his *Hermes* books, he openly proposes the net diagram as medium of complex historio-

3 Cf. Eric de Bruyn, "Topological Pathways of Post-Minimalism," in *Grey Room* 25 (2006), pp. 32–63; Astrit Schmidt-Burkhardt, *Die Kunst der Diagrammatik: Perspektiven eines neuen bildwissenschaftlichen Paradigmas*, rev. 2nd ed. (Bielefeld: transcript 2017).

4 J. Clyde Mitchell, ed., *Social Networks in Urban Situations: Analyses of Personal Relationships in Central African Towns* (Manchester: Manchester University Press, 1969).

5 Network theory has become very popular, including books like Albert-László Barabási's account on graph theory and networks in Albert-László Barabási, *Linked: The New Science of Networks* (Cambridge, MA: Perseus, 2002). Media theoreticians have begun to approach the ever-present discourse on networks critically: see Alexander Galloway, *Protocol: How Control Exists after Decentralization* (Cambridge and London: MIT Press, 2004); Eugene Thacker, "Networks, Swarms, Multitudes: Part I / II," *ctheory.net* (2004), http://www.ctheory.net/articles.aspx?id=422resp.id=423 (accessed July 10, 2008); Alexander Galloway and Eugene Thacker, *The Exploit: A Theory of Networks* (Minneapolis and London: University of Minnesota Press, 2007). Manuel Castells's groundbreaking sociology of the network society only roughly covers the second half of the twentieth century: Manuel Castells, *The Rise of the Network Society*, 2nd ed. (Oxford and Malden, MA: Blackwell Publishers, 2000).

French researchers started to write the national history of "territorial networks" in the 1980s while Thomas Hughes's history of electricity in Western societies has set the standards for the history of electrical networks: Georges Dupuy, ed., *Réseaux territoriaux* (Caen: Paradigme, 1988); Thomas P. Hughes, *Networks of Power: Electrification in Western Society 1880–1930* (Baltimore and London: Johns Hopkins University Press, 1983). But the historicity of networking as a cultural technique remains largely unknown, although first steps have been made by Laura Otis, *Networking: Communicating with Bodies and Machines in the Nineteenth Century* (Ann Arbor: The University of Michigan Press, 2001); Hartmut Böhme, Jürgen Barkhoff, and Jeanne Riou, eds., *Netzwerke: Eine Kulturtechnik der Moderne* (Cologne: Böhlau, 2004); Sebastian Gießmann, *Netze und Netzwerke: Archäologie einer Kulturtechnik, 1740–1840* (Bielefeld: transcript, 2006).

6 W. J. T. Mitchell, "Diagrammatology," in *Critical Enquiry* 7, no. 3 (1981), pp. 622–33. The current research on diagrams in humanities and image sciences has grown too extensive to be referenced completely. For a concise overview of Euro-American scholarship, see Steffen Bogen, "Logische und ästhetische Experimente: Diagramme bei Peirce und Duchamp," in *Räume der Zeichnung*, ed. Angela Lammert et al. (Nürnberg: Verlag für moderne Kunst, 2007), pp. 38–56, esp. footnote 5, pp. 40–42.

7 See Hartmut Böhme, "Netzwerke: Zur Theorie und Geschichte einer Konstruktion," in *Netzwerke* (see note 5), pp. 17–36, esp. 19.

8 For a comparison of Serres' and Foucault's diagrammatology, see Petra Gehring, "Paradigma einer Methode: Der Begriff des Diagramms im Strukturdenken von Michel Foucault und Michel Serres," in *Diagrammatik und Philosophie*, ed. Petra Gehring et al. (Amsterdam: Rodopi, 1988), pp. 89–105.

graphical narrations.[9] In his small yet rich book on Carpaccio, the focus is slightly different: "Here now the assertions are on the third"[10]—not on philosophy of communication or mathematical reasoning, but on aesthetics. Serres would not be Serres were he not to dare to find all of those aspects in the Renaissance images by Carpaccio. In fact, he does metaphorize all of these points in his descriptions. *En passant*, he develops an epistemology of the (diagrammatic) image, which is highly interesting, significant, and pathological. Every image by Carpaccio is being read with respect to its narrative geometry. Thus, Serres is translating the action of the image and its formal structures to points, coordinates, vectors, and flows. He deciphers the immanent diagrammatics of the pictorial through a specific mode of narration. Out of this an iconic space emerges that, through its character as a geometric figure, promotes the creation of the tableau. This is not meant to describe a solid form or structure; rather, Serres insists on a permanent transformation which operates as geometrically discursive and discursively geometric. Clad in a rhetorical question, he is outlining his very own epistemic mode himself: "Geometry as art of transformation—how could one define it more exactly?"[11]

Involuntarily, such a trope reminds of Panofsky's attempts to understand the constructions of perspective from antiquity to impressionism as a "symbolic form."[12] But Serres is not drawing lines in a picture *ex post* just to find them preceding the image. His thought knows a certain disposition: that of an undetermined, uncodified preeminence of the diagrammatical. All visual aesthetics is therefore relational aesthetics. It is constantly in movement, even if the iconic form seems to occur as something stable. The dynamization—Serres is almost always promoting forms of *dynamis*—is determined by the narration of image acts. Right here also exists a capacity for historization.

We would now have to make at least three interventions. Firstly: by speaking about the pathological and slightly schizoid dimension of a style of thought which promotes the emergence of difference and history out of interfering structures of structures. Secondly: by outlining Serres's space-encompassing understanding of "discourse" in which the semantics of a discourse finds itself in the spatial forms of images. Discourse literally means "Drawing here and there, expanding into all the senses/directions."[13] "The iconic communication transports *all abstractions and every history*, both the theorems and the narrations."[14] Thirdly: by insisting on the confrontation of image and *écriture* rather than dissipating it.[15] Because it could be argued that Serres is undermining what German art historian Gottfried Boehm has called "iconic difference."[16] In this case, the diagrammatics of the image therefore would be a form of immersive image magic which is working with the vocabulary of the (natural) sciences.

Moreno's Elective Affinities: Sociometry and Social Atomism

Energetical image magic: this could be the overall slogan for Jacob Levy Moreno's (1889–1974) project of sociometry. While the classics of sociology like Comte, Weber, Durkheim, and Simmel rarely used graphical methods, the 1930s introduced new methods like Otto Neurath's *Bildstatistik* (visual statistics). Most of these attempts both deal with huge sets of numerical data as well as strive to appeal to larger audiences. In the case of Neurath, statistical knowledge, mathematics, politics, and visualization were intertwined. Additionally, Moreno's sociometric graphs frankly import the image practices of chemistry in a parasitic manner. The "social atom" (fig. 1) therefore becomes the basic element of sociological visual argumentation. This kind of epistemic heist and love affair with the visual codes of chemistry stands in the long tradition of exchanges between the science of substances and particles and the imaginary of human relations. Hermetic and alchemical traditions, Lavoisier's revolution of chemistry, and Goethe's *Wahlverwandtschaften* had been agents of that play

9 Michel Serres, *Hermes ou la communication* (Paris: Les éditions de minuit, 1968), pp. 11ff. Also see Gießmann, *Netze und Netzwerke* (see note 5), pp. 97ff.

10 "Voici les assertions sur le troisième." [Translation provided by the author.] Michel Serres, *Esthétiques sur Carpaccio* (Paris: Hermann, 1975), p. 7.

11 "La geométrie comme art des transformations, comment la définir avec une meilleure exactitude?" [Translation provided by the author.] Ibid., p. 19.

12 Erwin Panofsky, "Die Perspektive als symbolische Form," in *Deutschprachige Aufsätze II*, ed. Karen Michels (Berlin: Akademie-Verlag, 1998), pp. 664–757.

13 "Discours: courir ça et là, se répandre en tous sens." [Translation provided by the author.] Serres, *Esthétiques sur Carpaccio* (see note 10), p. 85.

14 "La communication iconique transporte *toutes les abstractions et toutes les histoires*, les théorèmes et les récits." [Translation provided by the author.] Ibid., p. 142.

15 For an excellent analysis of the chiasm between image and discourse, see Dieter Mersch, "Das Bild als Argument: Visualisierungsstrategien in der Naturwissenschaft," in *Ikonologie des Performativen*, ed. Christoph Wulf and Jörg Zirfas (Munich: Fink, 2005), pp. 322–44.

16 Gottfried Boehm, "Jenseits der Sprache? Anmerkungen zur Logik der Bilder," in *Iconic Turn: Die neue Macht der Bilder*, ed. Christa Maar and Hubert Burda (Cologne: DuMont, 2004), pp. 31ff.

in the centuries before.[17] In fact, the sociometric drawings present themselves as a kaleidoscope of European-American elective affinities. The social of chemistry generates a chemistry of sociability (again).

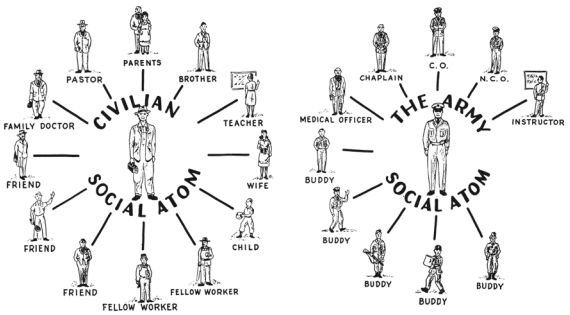

Fig. 1: E. Fantel, *The Civilian and Army Social Atom, Before and After*, 1951, from Jacob Levy Moreno, *Who Shall Survive*, Beacon, N.Y., 1953, p. 306 / 307.

On April 3, 1933, the *New York Times* included a short article with the title "Emotions Mapped by New Geography." It opens with the following catchphrases: "Charts Seek to Portray the Psychological Currents of Human Relationships. FIRST STUDIES EXHIBITED Colored Lines Show Likes and Dislikes of Individuals and of Groups. MANY MISFITS REVEALED Dr. J.L. Moreno Calculates There Are 10 to 15 Million Isolated Individuals In Nation."[18] The reader learned about the invention of a brand new science named "psychological geography." During the annual meeting of the New York Medical Society at the Waldorf Astoria Hotel, the new discipline was presented along with an exhibition of notable graphical charts. The colored maps by sociologist Jacob Levy Moreno had been purposefully communicated to the press by Dwight Anderson, the PR officer of the Medical Society.

Initially, Moreno was going to publish the results of his sociogeographic research in 1934 in a book called *Who Shall Survive? A New Approach to the Problem of Human Interrelations*. The German edition from 1953 carries a more neutral title, *Die Grundlagen der Soziometrie* (The Basics of Sociometry). In its subtitle "Wege zur Neuordnung der Gesellschaft" (Paths to the Rearrangement of Society), it is hinting at the social, utopian, and religious aspects of Moreno's thought.[19] Jacob Levy Moreno was—amongst other things—an anti-Marxist, anti-psychoanalyst (or at least anti-Freudian), half-messianic thinker with an unclear relation to his Jewish origins, head of a theater of improvisation, and "psychodramatic" group therapist.[20] After his European years in Vienna and Berlin, he migrated to the U.S. in 1926 where he became head of a reeducation camp for young girls in Hudson, New York around 1930.

The history of that camp plays an important role for the epistemic career of social networks. All of Moreno's sociogeographical observations became scientifically authorized by his rather immodestly named "Moreno Institute." In the first place, the modern network knowledge of sociology was produced

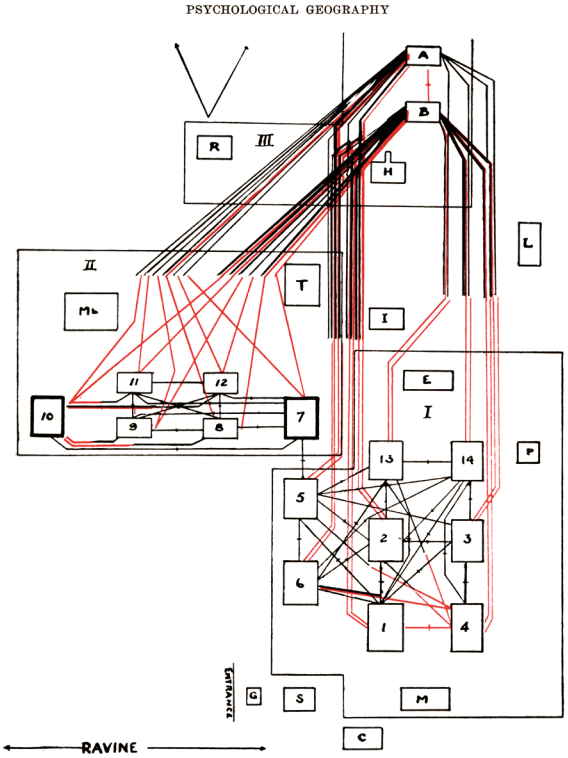

Fig. 2: Jacob Levy Moreno (?), *Psychological Geography Map II*, 1934, from Jacob Levy Moreno, *Who Shall Survive*, Beacon, N.Y., 1953, p. 426.

17 For the intersections of chemical knowledge and literature, see Joseph Vogl, "Mittler und Lenker: Goethes Wahlverwandtschaften," in *Poetologien des Wissens um 1800* (Munich: Fink, 1999), pp. 145–61.

18 *New York Times*, April 3, 1933, p. 17.

19 Jacob Levy Moreno, *Who Shall Survive? Foundations of Sociometry, Group Psychotherapy and Sociodrama* (Beacon, N.Y.: Beacon House, 1953); Jacob Levy Moreno, *Die Grundlagen der Soziometrie: Wege zur Neuordnung der Gesellschaft*, 2nd ed. (Cologne-Opladen: Westdeutscher Verlag, 1967).

20 On the performative aspect of Moreno's work, see Brigitte Marschall, "'Ich bin der Mythe': Von der Stegreifbühne zum Psychodrama Jakob Levy Morenos," *Maske und Kothurn* 13 (1988) and Brigitte Marschall, "Jakob Levy Morenos Theaterkonzept: Die Zeit-Räume des Lebens als Szenenraum der Begegnung," *Zeitschrift für Psychodrama und Soziometrie* 4, no. 2 (2005), pp. 229–43. For a practitioner's view on psychodrama and sociodrama, see Ferdinand Buer, ed., *Morenos therapeutische Philosophie: Die Grundlagen von Psychodrama und Soziometrie*, 3rd ed. (Opladen: Leske + Budrich, 1999).

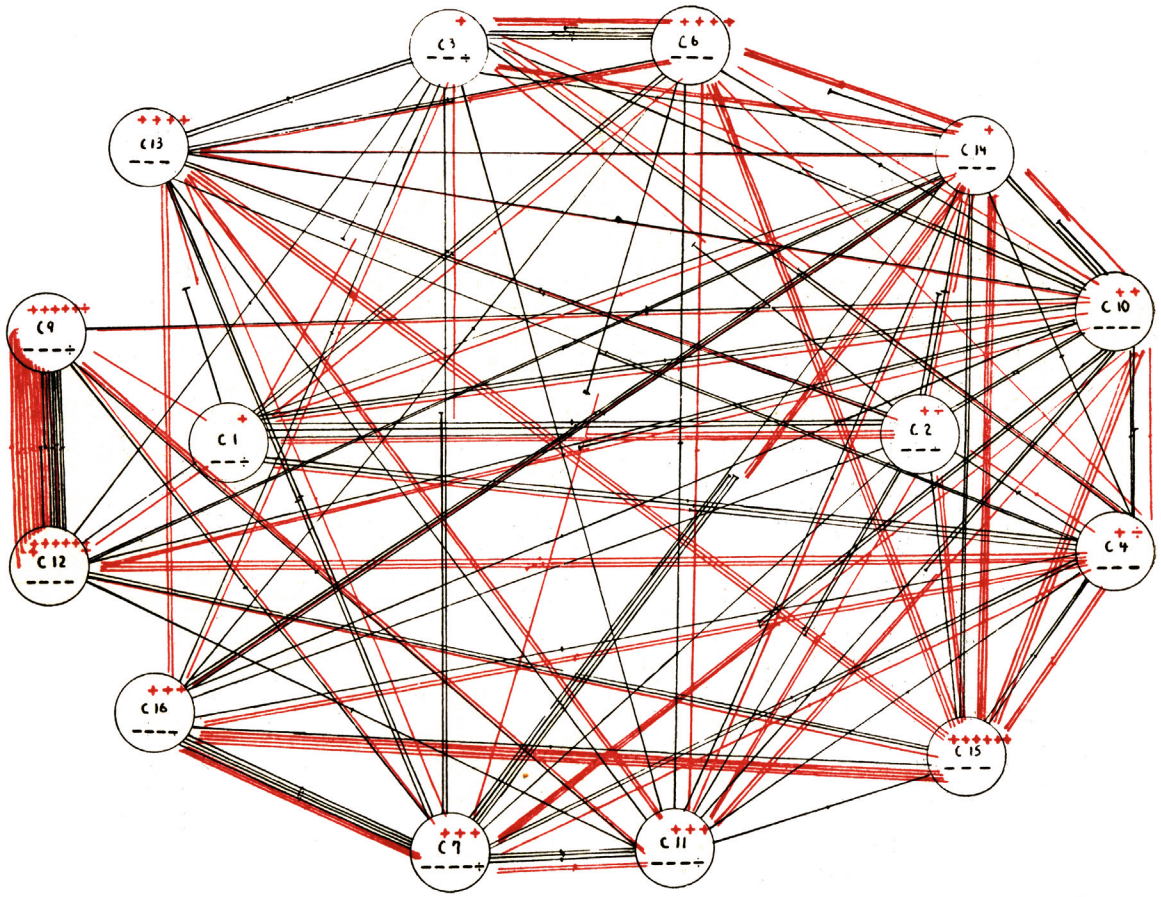

Fig. 3: Jacob Levy Moreno (?), *Psychological Geography Map IV. A Reduction Sociogram*, 1934, from Jacob Levy Moreno, *Who Shall Survive*, Beacon, N.Y., 1953, p. 428.

in and through the personal relations and "psychological currents" of a community of young black and white girls. Their status as outcasts and their racial relations play a constant role in Moreno's analysis. His case studies are situated within the everyday life of a closed setting of reeducation in Hudson. One might be tempted to refer to Giorgio Agamben's theory of the camp as "*nomos* of the modern" to understand the spatial dynamics of this environment. But Moreno's biopolitical regime is closer to the Californian model camps of John Steinbeck's *Grapes of Wrath* than to the forms of "bare life" that Agamben describes.[21] The systemic closed setting in fact provides a scene similar to the Brechtian aesthetics of Lars von Trier's motion picture *Dogville*.[22] The mediated representation of Hudson becomes a matter of drawing practices and image acts, just like the social space of *Dogville* emerges out of drawn lines on a theater stage.

Moreno's wish to understand the scheme and plot behind the constant attempts to escape is approached through a massive mapping. In a series of five maps, the concrete topography of the camp with its 435 girls in sixteen houses is transformed into a topological structure. The clearly positioned, rectangular houses of the girls metaphorically develop into a cluster of large, circular, social atoms (figs. 2–3). Attraction (red), rejection (black), attraction/rejection (red/black), and indifference (blue) are represented graphically. The courses of those streams create an energetic model of different "psychological currents" that can all be measured. The classification of the different currents is rather peculiar: sexually, racially, socially, industrially, culturally.[23]

Yet all of this is not enough for Moreno. It does not suffice to explain the foundation principle of social connections: "There are still deeper layers. We had suspected that beneath the ever flowing and ever changing currents there must be a permanent structure, a container, a bed which carries and mingles its currents, however difficult their goals may be …"[24]

Moreno's fourteen runaway girls become his master example. He concludes that they must have been part of a "hidden" network. This résumé follows the

21 Giorgio Agamben, *Homo Sacer: Sovereign Power and Bare Life* (Stanford: Stanford University Press, 1998).

22 *Dogville*, directed by Lars von Trier, 178 min. (Zentropa Entertainment et. al, 2004).

23 Moreno, *Who Shall Survive?* (see note 19), p. 438.

24 Ibid., p. 440.

diagrammatic method which Moreno had already developed for recording his performative improvisation pieces. Without a mapping, there is no network in-formation to be found. Netlike graphs work as a performative social matrix. In the case of Moreno, freedom and independence of the individual—long live the American spirit!—are guaranteed by social connectivity. With their dissemination, networks become *the* controlling super-organization of society. In all his enthusiasm, Moreno provides a general thesis which is clearly inspired by gestalt psychology:[25]

> "The networks represent the oldest form of social communication. Traces of them are already in subhuman societies. They are collective formations, the individual participants are unconscious of all the networks in which they participate, although they may be aware of one or another link between some of the individuals, or realize that such networks can exist. An individual cannot move out of networks, just as he cannot move out of his skin. Networks pre-exist him and pre-exist the official groups of which he is part."[26]

The Hudson surveillance regime of data-collecting house moms is certainly dubious. But as a sociomicroscopic principle it precisely measures social exclusion. Sixteen percent of all interviewed girls have not been recognized as "worthy of contact". With a short hint to similar studies, Moreno projects the Hudson data on New York's entire population: out of 7 million people, 1.12 million must find themselves in an isolated position. Out of this, a social imperative calls for attention: "You gotta seek the spatiotemporal closeness to your fellow citizens!" Being an explicit request, this calling has its roots in the psychodramatic drama of spatial positioning. It also seems like a foreboding of both Dust Bowl and New Deal.

The maps numbers III and IV (fig. 3)—the handdrawn original of the first is supposed to have been 6 by 4.5 meters large—are the topological correlates of a question posed to the Hudson girls. With whom would you like to live together? Based on the answers, Dogville-Hudson is characterized by five networks. These are created by intense mapping that is based on tabular matrices of rejection, sympathy, and indifference (fig. 4). In the mathematical terms of graph theory, Moreno follows every path until its interruption to determine the runaway chains of girls, after which he carries on with the next chain of persons in question. The discrete Yes/No and attraction/rejection structure excludes the measurement of indifference, which is nonetheless regarded as a prime feature of sociability.

Without the capabilities of digital computers, the sociometric matrix is the genuine tool for data processing. Measuring the social means managing tables of relations. The coding of relations is done via semiotic operators like plus, minus, and zero. Today's sociological standards operate along the digital difference between zero and one, connection and nonconnection.[27] Yet this abstract measure cannot conceal that all ethnographic fieldwork is local in the beginning. Groups and communities that the sociometrists wanted to chart entirely have become the playground for the discovery of social networks. These ongoing findings form a rather peculiar and notable part of network history. In the case of British social anthropology, John A. Barnes's seminal study summarizes fieldwork in a Norwegian village of fishers [*sic*].[28] Instead of urban densities, rural practices open up the view upon—as Moreno would say—"hidden networks" that we now regard openly as formation ground of the network society.

German media theoretician Erhard Schüttpelz has shown that the semantics of networking changed significantly from the nineteenth to the twentieth centuries. While the macrotechnological infrastructures (gas, water, railroad, telegraph, etc.) dominated up until 1930, the usage then shifted and drifted toward microsociological approaches.[29] Moreno's camp nar-

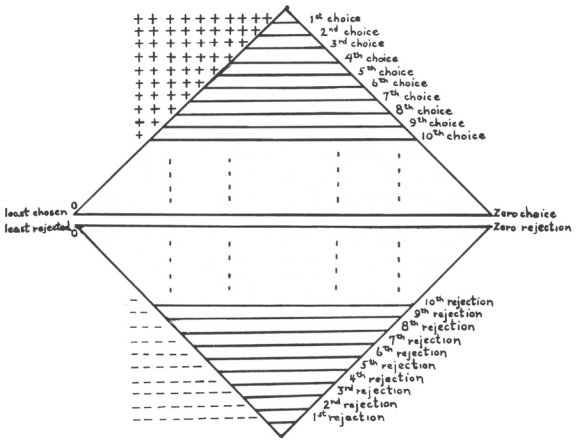

Fig. 4: Jacob Levy Moreno (?), *Hierarchic Sociogram*, 1934, from Jacob Levy Moreno, *Who Shall Survive*, Beacon, N.Y., 1953, p. 435.

25 Moreno stood in contact with Kurt Lewin. On Lewin's influence on topological thought of social networks, see Linton C. Freeman, *The Development of Social Network Analysis: A Study in the Sociology of Science* (Vancouver: Empirical Press, 2004), pp. 66ff.

26 Moreno, *Who Shall Survive?* (see note 19), p. 430.

27 Pierre Mercklé, *Sociologie des réseaux sociaux* (Paris: La Découverte, 2004), pp. 29ff.

28 John A. Barnes, "Class and Committees in a Norwegian Island Parish," in *Human Relations* 7 (1954), pp. 39–58.

29 Erhard Schüttpelz, "Ein absoluter Begriff: Zur Genealogie und Karriere des Netzwerkkonzepts," in *Vernetzte Steuerung: Soziale Prozesse im Zeitalter technischer Netzwerke*, ed. Stefan Kaufmann (Zurich: Chronos, 2007), pp. 25–46.

Fig. 5: Jane Pitts, *Chart I. Friendship constellation ("Lady Bountiful")*, 1938, from George A. Lundberg and Mary Steele, "Social Attraction-Patterns in a Village," in *Sociometry* 1.3/4 (1938), p. 387.

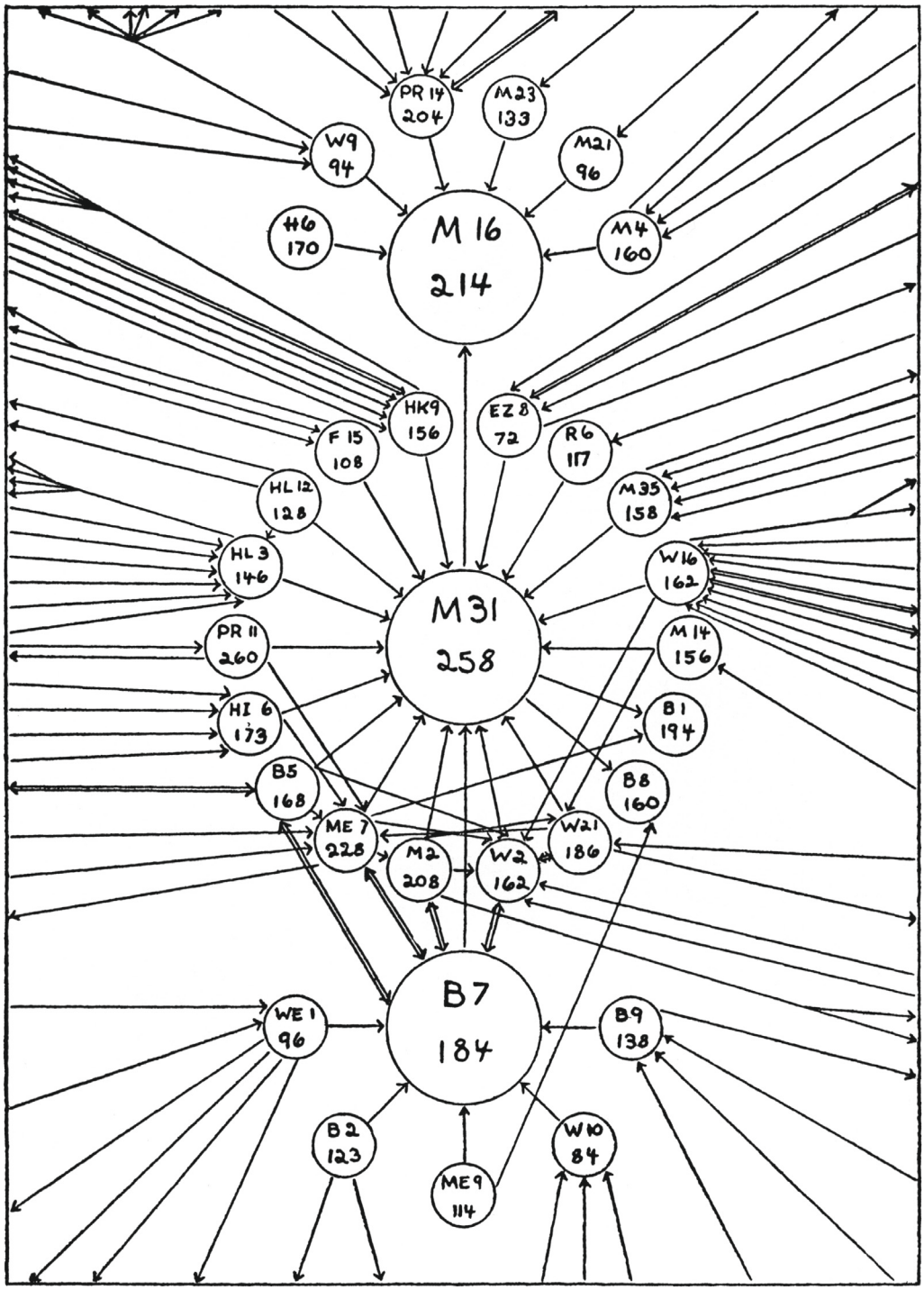

CHART I

The most important "friendship" constellation in the village, centering on the matriarch of the leading family with her principal satellites, a physician-politician (M 16) and a banker's wife (B 7). Each person is represented by a circle. The letter and the first number in the circle is the code symbol of the person. The second number is that person's score of socio-economic status on the Chapin Scale. Each arrow represents a choice made or received according to the direction of the arrow. Mutual choices are represented by double-headed arrows. (On account of charting difficulties the following lines are omitted from this chart: Me 7 and M 2 to Pr 14; We 1 and W 16 to Hl 3.)

rations and drawing practices are an early example of this development. They insprire the self-conception of the articles to be published in the journal *Sociometry*. One of the best examples for the sociometric style "in the making" can be found in a series of reports about "Social Attraction Patterns in a Rural Village" which were published in 1937 and 1938. Written by sociologists George A. Lundberg and Mary Steele, these texts pursue an objective analysis of social events as "atomic behavior."[30] Their field of experimentation is an unnamed Vermont community with a population of around one thousand. Its social structure is identified by questioning about two hundred families that form 94 percent of the population. Lundberg and Steele are especially keen to recognize energies that preclude or lie "behind" the observable processes. The basic human elementary particles are all understood as social atoms with connections to other individuals. But which structural rules are being followed by the charted social relations? In the first attempts at map creation, the sheer amount of questionnaire data does not allow for a visual synopsis to be drawn. The direct mode of sociometry quickly proves to be limited. The lines tend to form "an inextricable maze which tended to obscure the significant clusterings which we wished to exhibit."[31] Steele and Lundberg are consciously referring to Moreno's enthusiasm while they unconsciously use vocabulary of information theory: "If we choose to regard any social group as a system of energy flowing through a more or less intricate pattern of intersecting channels, then the charting of these channels becomes a primary problem in the explanation of the behavior of the group."[32]

Using several typical scales of 1930s sociology to measure socioeconomic and cultural status,[33] the ethnographers mostly note the information provided by housewives on their closest friends.[34] The result of this bricolage of chemistry, economy, behaviorism, embellished psychoanalysis, and open structuralism is the cybernetization of a small town. Eight elegant diagrams represent the founding networks or "constellations." Persons with a high number of incoming and outgoing connections are placed in the center. The most prominent example of this is the famous "lady bountiful." Drawn by Jane Pitts, a student working in the project, it appears in the style of a modern Cabalist sefiroth tree (fig. 5). Around the lovely and charitable donor "lady bountiful"—age: 60, geographic localization: M 31, measure on the socioeconomic scale: 258—a multitude of unidirectionally attracted individuals are assembled. They do possess a great number of connections to the seven further networks. Our matriarch feels tied to M 16, a physician and politician who is named as "satellite" in sociometric vocabulary. As it turns out, she is being appreciated by another satellite, the banker's wife B 7. This Serres-like, geometric-narrative mode also characterizes the other six diagrams. No. V is centered around the woman of a factory foreman who serves as a "hub." An exception to the ongoing play of debit

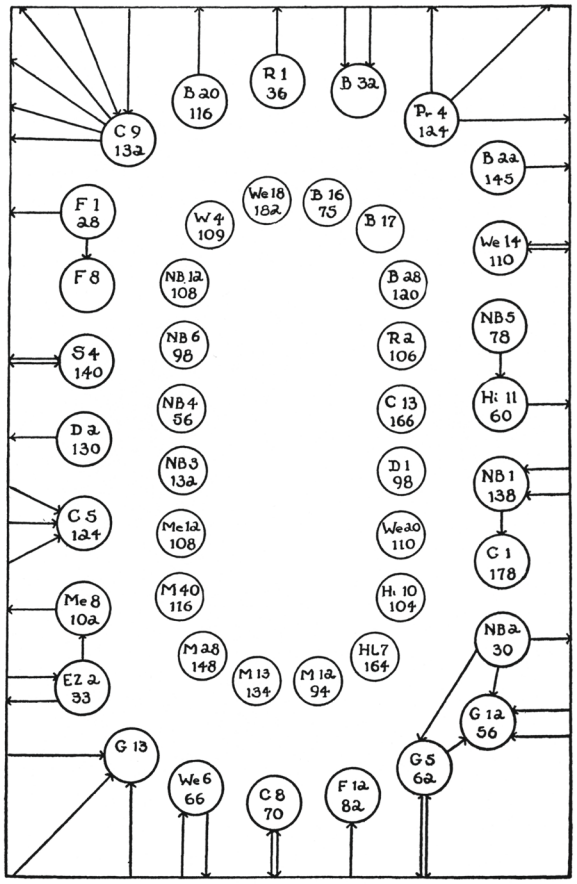

CHART VIII

Isolated and semi-isolated individuals. This chart consists of all persons (a) (inner circle) not making or receiving any choices in the village and (b) persons not appearing in any of the other charts or on their margins. All except three of the inner circle are recent migrants, persons with normal social contacts in adjoining areas or neighboring villages, and some summer residents. Mean socio-economic score, inner circle, 117; outer circle, 93, by far the lowest of any group in the village. The group makes 21 outward choices toward 18 individuals, a per capita of 1.1. 21 choices are received from outside by 14 individuals, a per capita of 1.5. Centripetal index, 1.3.

Fig. 6: Pauline Lee, *Chart 8. Isolated and semi-isolated individuals*, 1938, from George A. Lundberg and Mary Steele, "Social Attraction-Patterns in a Village," in *Sociometry* 1.3/4 (1938), p. 409.

30 George A. Lundberg, "Social Attraction Patterns in a Rural Village: A Preliminary Report," in *Sociometry* 1, nos. 1–2 (1937), pp. 77–80, esp. p. 80. George A. Lundberg and Mary Steele, "Social Attraction Patterns in a Village," in *Sociometry* 1, nos. 3–4 (1938), pp. 375–419, esp. p. 375.

31 Lundberg and Steele, "Social Attraction Patterns in a Village" (see note 30), p. 379.

32 Ibid., p. 376.

33 This included the so-called Chapin scale on socioeconomic status. See Francis Stuart Chapin, *The Measurement of Social Status by the Use of the Social Status Scale 1933* (Minnesota: University of Minnesota Press, 1933).

34 This follows the energetic scheme of "attraction" and "repulsion." See Lundberg and Steele, "Social Attraction-Patterns in a Village" (see note 30), pp. 376ff.

and credit of social capital can only be found in the last diagram. It depicts the lonely and excluded of the Vermont village: no bonds, no importance (fig. 6).

All those paper machines are more than mere toys out of the infancy of sociological network research. Even Mary L. Northway's method of the so-called "target sociogram" of the 1940s served as a playful way of dynamic modeling (fig. 7). The dame M 31 herself continues to persist after Lundberg and Steele's reports. In fact, her ghost is haunting the history of English-speaking sociology as a very charitable

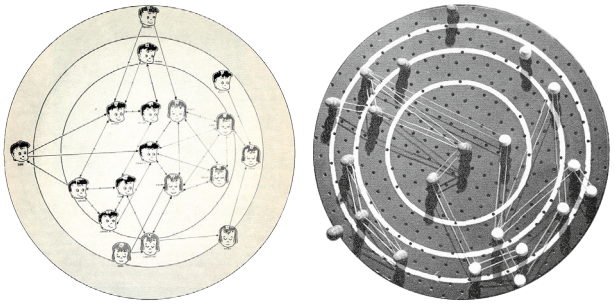

Fig. 7: Left: Grant, *Target Sociogram of a First Grade Class*, 1952. **Right:** McKenzie, *Target Sociogram Board*, 1952, from Linton C. Freeman, "Visualizing Social Networks," in *Journal of Social Structure* 1.1 (2000), http://www.cmu.edu/joss/content/articles/volume1/Freeman.html

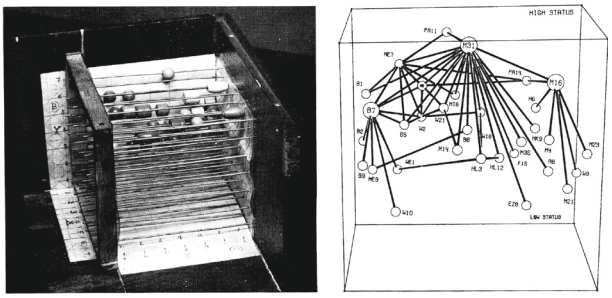

Fig. 8: Left: F. Stuart Chapin, *Tabulating Machine*, 1950, from F. Stuart Chapin, "Sociometric Stars as Isolates," in *American Journal of Sociology* 56.3 (1952), p. 267. **Right:** Alden S. Klovdahl / ORTEP, A three-dimensional computer-drawn, visual representation of the 'lady bountiful' network rotated to present a 'side view', 1981, from Alden S. Klovdahl, "A Note on Images of Networks," in *Social Networks* 3 (1981), p. 207.

undead: the Vermont data are used for exemplary studies time and again. A three-dimensional calculus machine for social status was built on that basis in 1950. Lundberg and Steele's data also deliver the foundation for the first three-dimensional, real-time computer visualizations of social networks around 1980 (fig. 8). While only screenshots have survived, the formerly used software itself is still around. ORTEP—an application for crystallography—served as the basis for reworking the data from 1938.[35] Once again, sociologists are using the iconic and symbolic practices of chemists. The enthusiasm is high in the beginning, although software implementations of chemical power relations (multiple bonds, valences) even today set a hindrance to the sociological will to codify relations. The recent years have seen a rise of network simulations that allow quick manipulation. More and more software programs are programmed and propagated, for example in the form of Java applets. They tend to be fed with old data sets, too.[36] Nodes can be moved, arcs can be removed, and the iconic visual style becomes rather arbitrary. Relations are not taken for granted. Instead, the pragmatic and operative acting with computer data supersedes a diagrammatic style which is now regarded as static. The diagram becomes a moving image.[37] It shows and tells while it computes. And it computes while it represents and narrates.

Few have named the influence of the very material imaginary of net-works on sociability better than Walter Benjamin. In his fragment on capitalism and religion, he writes: "We cannot draw closed the net in which we are caught."[38] On the contrary, the (diagrammatic) net strives for constant growth, which is one of the key features of networks. As Serres has shown, the unfolding of diagrammatic networks over time is possible through discourse as well as performative image acts. Speaking, writing, drawing, and

35 See Alden S. Klovdahl, "A Note on Images of Networks," in *Social Networks* 3 (1981), pp. 197–214, esp. pp. 201ff. ORTEP (Oak Ridge Thermal-Ellipsoid Plot Program) was initially programmed in the 1960s. See C. K. Johnson, *ORTEP: A FORTRAN Thermal-Ellipsoid Plot Program for Crystal Structure Illustrations, ORNL Report 3794* (Oak Ridge, TN: Oak Ridge National Laboratory, 1965).

36 The Java applet under http://www.cmu.edu/joss/content/articles/volume1/images/fig30A is based on data from Allison Davis, Burleigh B. Gardner, and Mary R. Gardner, *Deep South* (Chicago: University of Chicago Press, 1941). It follows fourteen informal meetings of eighteen women. Their closeness and distance relations have been remodeled in an online application. The numbers above the nodes are based on the number of meetings. See Linton C. Freeman, "Visualizing Social Networks," in *Journal of Social Structure* 1, no. 1 (2000). http://www.cmu.edu/joss/content/articles/volume1/Freeman.html (accessed November 28, 2017).

37 See Klovdahl, "A Note on Images of Networks" (see note 35), pp. 210ff.

38 Walter Benjamin, "Capitalism as Religion," *Selected Writings: Volume I, 1913–1926* (Cambridge, MA: Belknap Press, 1996), p. 288. "Wir können das Netz, in dem wir stehen, nicht zuziehen." Walter Benjamin, "Kapitalismus als Religion," *Gesammelte Schriften VI*, ed. Rolf Tiedemann and Hermann Schweppenhäuser (Frankfurt am Main: Suhrkamp, 1985), pp. 100–103, esp. p. 100.

Fig. 9: Bill Condon, Frederick Elmes et al., *Sequence from Kinsey*, 2004, DVD stills.

computing meet in the visual form of the network diagram: "The iconic communication transports *all abstractions and every history*, both the theorems and the narrations."[39]

A final contemporary example illustrates the ongoing intersection and interplay between graphematics and iconicity remarkably well. Contingent or not?—it depicts another grand sociological project as a scene of networking. The motion picture *Kinsey* from 2004, directed by Bill Condon, narrates the creation of the famous report in a four-minute sequence.[40] In a complex mix of CGI animations and talking-heads footage, the viewer experiences a scene with many temporal, spatial, and semantic layers (fig. 9). A discourse on the normalization of gender and sex centers around the recurring question "Am I normal?" We follow the interviewers around Liam Neeson's Kinsey on their way across the United States. Condon directs this process as an emerging interactive and extending, that is, centripetal mapping. Its animated self-drawing red connections chart the trajectories to towns and people. Talking persons become embedded in the map, and the impression of a large national actor network is developed. Its information aesthetics takes the form of a situated and connected collective narration. While we see and hear the single voices in the beginning, the network gradually turns out to be diagrammatic composite photography. The network diagram—which by now mostly works as a Warburgian *Pathosformel* without pathos—is getting charged with sociometric narrative-energetic streams. As opposed to many other diagrams, the national map remains a constant reference. Topography and topology remain intertwined—the figure does not lose its ground as it did in Moreno's maps of the Hudson girl camp. Instead of an enigmatic world, a large-scale measurement enters the scene as mediated historiography *en miniature*. To say it with Walter Benjamin, again: "It starts the web which all stories together form in the end. One ties on to the next, as the great storytellers, particularly the Oriental ones, have always readily shown."[41]

Translated by Dawn Michelle D'Atri

39 "La communication iconique transporte *toutes les abstractions et toutes les histoires*, les théorèmes et les récits." [Translation provided by the author.] Serres, *Esthétiques sur Carpaccio* (see note 10), p. 142.

40 *Kinsey*, directed by Bill Condon, 118 min. (Qwerty Films et. al, 2004).

41 Walter Benjamin, "The Storyteller: Reflections on the Works of Nikolai Leskov," in *Illuminations: Essays and Reflections*, ed. Hannah Arendt, trans. Harry Zohn (New York: Schocken Books, 1988), pp. 83–107, esp. p. 98. "Sie stiftet das Netz, welches alle Geschichten miteinander am Ende bilden. Eine schließt an die andere an, wie es die großen Erzähler immer und vor allem die orientalischen gezeigt haben." Walter Benjamin, "Der Erzähler: Betrachtungen zum Werk Nikolai Lesskows," in *Gesammelte Schriften II*, ed. Rolf Tiedemann and Hermann Schweppenhäuser, 2nd ed. (Frankfurt am Main: Suhrkamp, 1989), pp. 438–65, p. 453. On the integrative function of narrations for networks, see Samuel Weber, *Targets of Opportunity: On the Militarization of Thinking* (New York: Fordham University Press, 2005).