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Journey to the Edges: Social Structures and Neural Maps of Intergroup Processes

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Abstract

This article explores boundaries of the intellectual map of intergroup processes, going to the macro (social structure) boundary and the micro (neural systems) boundary. Both are illustrated by with my own and others' work on social structures and on neural structures related to intergroup processes. Analyzing the impact of social structures on intergroup processes led to insights about distinct forms of sexism and underlies current work on forms of ageism. The stereotype content model also starts with the social structure of intergroup relations (interdependence and status) and predicts images, emotions, and behaviors. Social structure has much to offer the social psychology of intergroup processes. At the other, less explored boundary, social neuroscience addresses the effects of social contexts on neural systems relevant to intergroup processes. Both social structural and neural analyses circle back to traditional social psychology as converging indicators of intergroup processes.

Science requires change. As in a collective journey, the scientific itinerary entails progress, discoveries, delays, uncertainty, unfamiliarity, and sometimes discomfort. Individually, as scientists, our tolerance for disruption varies, but as a field, we must welcome it, and indeed discomfort can index innovation (Fiske, 2003). To be sure, we hold innovations to high standards—often higher than established paradigms, because as scientists we are skeptics, hence our differing thresholds for the old and the new. As a field, however, we must be willing to journey to the edges of our known world. Part of *BJSP*'s landmark series, this article explores some boundaries of the intellectual map of intergroup processes, illustrated by work with my own travel companions, but maybe also serving as a travelogue for potential fellow explorers.

Here Be Dragons

Travel to the edges pushes people into alien territories, where explorers often become partially converted, acquiring hyphenated identities. Funding agencies and university administrators are constantly pushing boundary-crossing enterprises, big-science projects, multi-disciplinary endeavors, and other hyphenated pursuits, in the name of innovation, grant-getting, and (one speculates) cost-saving. Many scientists are understandably cynical, but some are excited. Hyphenated scientists take a risk, beyond the borders of established disciplines, where there be dragons.

Here, we explore both the macro and micro boundaries: on the one hand, the social structural side of our field, and on the other hand, its new neural side. British—and generally, European—social psychologists have long been brave about the social structural side of our field, compared with the American record. But there are new places to go with social structure, as our recent work provides but one illustration. The neural social side is expanding at a great rate, but maybe more evenly on both sides of the Atlantic, though often in cognitive rather than social neuroscience laboratories. Nevertheless, social neuroscience

is too much fun to leave to our intellectual neighbors, because of all the places to go here as well.

Adventures in Social Structure

As the recent untimely death of John Turner brings to mind, social structure is an important, useful, indeed crucial, destination for understanding intergroup processes. I am not the appropriate person and this is not the right setting to document his brilliant contributions, but homage in this instance acknowledges his insistence that self-categorization and identity depend on and define what differentiates groups and their members from other groups and their members. These social selves structure the personal self. European social psychology knows this better than does American social psychology, except for our branch located in sociology departments.

The occasional American psychology program does recognize its social science connection regarding social structure. Both older and newer ventures into the social psychology of social structure require this interdisciplinary mindset. In my own experience, training in the (now defunct) Social Relations program at Harvard encouraged our analyzing social structure but then running either experiments or surveys as needed. Currently, Princeton's Joint Degree Program in Psychology and Social Policy commits time to social sciences and encourages analyses of inequality. One reason for blurring boundaries between social and psychological sciences is that social structure predicts processes underlying intergroup encounters and disparities in life outcomes.

What results from such forays? For an example close to home: The Ambivalent Sexism Theory (AST; Glick & Fiske, 1996, 2011) started by analyzing the social structure of men's and women's relationships: male societal dominance, but male-female deep and enduring interdependence, a unique combination in intergroup relations. Major domains of gender encounters seemed to us to include heterosexual relations, workplace hierarchies, and gender roles, especially in the family. We envisioned the hostile and subjectively positive sides of each (e.g., gender roles as competitive or complimentary), resulting in items for the Ambivalent Sexism Inventory, with hostile and benevolent sides. The societal drives the interpersonal.

Recent work on AST shows just how consequential it can be for women. Women treated with "benevolent" sexism ("don't worry; all the men will help you") have more distracting, self-doubting memories and perform worse as a result (e.g., Dardenne, Dumont, & Bollier, 2007; Dumont, Sarlet, & Dardenne, 2010). In a work context, the combination of professional role and pregnancy (Hebl, King, Glick, Singletary, & Kazama, 2007) or motherhood (Cuddy, Fiske, & Glick, 2004) inflicts particular damage on women's hiring, training, and promotion. Fatherhood inflicts no such penalty because subjectively benevolent sexism aims to limit women to certain subordinate gender roles. Women's self-perceptions suffer from exposure to benevolent sexism, substituting the relational self for competence (Barreto, Ellemers, Piebinga, & Moya, 2010) and damaging body image (Shepherd et al., 2011). Women's own benevolent sexism makes them more responsive to partner advice limiting them to safer career options (Moya, Glick, Expósito, de Lemus, & Hart, 2007). Although women routinely fail to recognize benevolent sexism as sexism, when they do watch for it or learn about it, many of its insidious effects mitigate (Becker & Swim, 2011). To be sure, hostile sexism harms women also, as when hostilely sexist men objectify women's bodies (Cikara, Eberhardt, & Fiske, 2011). In all these ways, the gendered social structure guides men's and women's experiences. This is not a new phenomenon, as the structures of male dominance and male-female interdependence cross time and place.

Other features of social structure more reflect the historical moment. Another reason that social psychologists must attend to social structure is to anticipate the effects of impending demographic changes. Population dynamics predict the nature of social encounters. Consider age as a looming example. As our societies age, intergenerational tensions over resources, both tangible and symbolic, will likely escalate. Michael North and I are undertaking a structural analysis of ageism, parallel to the earlier analysis of gender relations. Younger and older people are in the same families, as men and women are, but the interdependence of younger with older adults differs from gender relations. In this case, age is a continuum, and the status hierarchy favors middle-aged people and subordinates both younger and older people. Also, of course, age is a unique form of intergroup relations in that people (hope to) change categories over time. All this informs our analysis of ageist intergenerational tensions that prescribe control over tangible resources (younger workers want older ones to retire), fears about passive consumption of shared entitlements (the young fear their elders will use up pension and health funds), and annoyance about elders invading youthful identity domains (young people unaccountably disapprove older people using the latest technology). Vignette experiments, simulated on-line encounters, and individual differences in ageism support the framework (North & Fiske, under review). The relevant point here is mainly its attempt to anticipate some of the intergroup and interpersonal effects of impending demographic change, a form of social structure impacting the intergroup.

Understanding how changes in societal structure influence intergroup processes also informs a more general analysis of the basic dimensions of social structure (and hence, social cognition, as well as intergroup phenomena). The Stereotype Content Model, originally developed to understand images of groups in U.S. society (Fiske, Cuddy, Glick, & Xu, 2002), turns out to be useful across countries and across history. Unbeknownst to us at the time (Fiske, 1998; Fiske, Xu, Cuddy, & Glick, 1999), concurrent American and European researchers were identifying similar dimensions (for intergroup relations: Alexander, Brewer, & Hermann, 1999; Alexander, Brewer, & Livingston, 2005; for person perception: Abele, 2003; Wojciszke, 1994, 2005; Wojciszke, Bazinska, & Jaworski, 1998; for nations: Phalet & Poppe, 1997; Poppe & Linssen, 1999), and prior researchers had uncovered roughly the same dimensions (Bakan, 1966; Peeters, 1992; Rosenberg, Nelson, & Vivekananthan, 1968), so their validity seems supported by consensus (see Fiske, Cuddy, & Glick, 2007 for one review). The first dimension involves the other people's perceived intent for good or ill, variously named warmth (friendly, trustworthy, sincere), communality, morality, social good-bad, and other-profitability. The second dimension involves their ability to enact those intentions, variously named competence, agency, intellectual good-bad, and self-profitability. The ingroup and societal reference groups are typically viewed as high on both dimensions, whereas the most extreme outcasts (nomads such as homeless people, immigrants, and gypsies) are viewed as low on both dimensions. This much, standard models of prejudice would expect.

The most useful aspect of the SCM and related models is identifying the mixed combinations, groups viewed as high on one dimension but low on the other. For example, groups with apparently good intentions, but incompetent to enact them, include older people and people with disabilities. They evoke pitiable images, active help, but also passive neglect (e.g., institutionalization). Pity's mixed cluster is distinct from its complement, the enviable groups with apparently ill intentions but competence to act on them; these include rich people and outsider entrepreneurs. They evoke passive association in normal times but Schadenfreude (malicious glee at their misfortunes), and even attack under social breakdown. The majority of groups fall into one of these two these mixed combinations, and the dimensions often operate in a compensatory fashion, whereby being high on one dimension implies being low on the other (Judd, James-Hawkins, Yzerbyt, & Kashima,

2005; Kervyn, Yzerbyt, & Judd, 2010, 2011; Kervyn, Yzerbyt, Judd, & Nunes, 2009). People make use of this in innuendo, stating the positive dimension to imply the negative one (“well, the job candidate was really a nice person...”; Kervyn, Bergsieker, & Fiske, in press).

Social structure predicts both warmth (perceived intent) and competence. Groups that allegedly compete with others in society are allegedly cold and untrustworthy, whereas cooperative groups are warm and trustworthy. Groups with high status are allegedly competent, whereas those with low status are allegedly incompetent. Prejudiced emotions follow from the structure-image chain (reference group pride and admiration; extreme outcaste disgust; as well as mixed groups’ pity and envy). Behavioral tendencies are the downstream result: active harm (e.g., attack) toward competitive groups, but active help toward cooperative ones; as well as passive harm (e.g., neglect) toward low-status groups, but passive help (e.g., association) toward high-status ones (Cuddy, Fiske, & Glick, 2007). Correlational and experimental tests (Caprariello, Cuddy & Fiske, 2009; Cuddy et al., 2007; Fiske et al., 2002; Kervyn, Fiske, & Yzerbyt, 2011; Oldmeadow & Fiske, 2007) support the structure-stereotypes-emotional prejudices-behavioral discrimination sequence.

Most relevant to the argument for social structure’s effects on intergroup processes, SCM cross-national comparisons show that the competition-warmth and status-competence correlations hold up in more than three-dozen countries rating their own salient groups (Cuddy et al., 2009; Durante et al., 2011). Similar results appeared in cross-nation ratings (Phalet & Poppe, 1997). What’s more, going back in time, the two dimensions help to make sense of Fascist discourse about social groups (Durante, Volpato, & Fiske, 2010): the Italians and Aryans were the alleged ideal, high on both dimensions; the British and Jewish enemies were competent but untrustworthy threats, and Black or mixed-race people were low on both dimensions and disgusting to the Fascists. The SCM also fits the earliest psychological investigations into open-ended descriptions of stereotype content by Katz and Braly (1933; Bergsieker, Leslie, Constantine, & Fiske, in press). These cross-national and cross-era comparative data increase the generalizability of the two dimensions as deriving from apparently universal features of social structure and describing a variety of intergroup images and processes.

From a micro-macro perspective, the SCM also helps explain the psychology that allows structural injustice to persist. For example, a nation’s overall income inequality predicts the shape of its SCM map (Durante et al., 2011). More equal countries tend to have a large inclusive ingroup cluster and a smaller set of extreme outgroups that presumably falls outside the collective safety net. Few groups appear in their ambivalent clusters. More unequal countries tend to have more complex maps, with more groups in the ambivalent clusters, so that the societal outgroups come in various types. Thus, inequality may be easier to justify because some low-status groups allegedly deserve it (undocumented immigrants, drug addicts), whereas others do not (older or disabled people) and could be helped. Likewise, although high-status outgroups (rich people, outsider entrepreneurs) may have earned it, but the rationalization goes, they lose their humanity getting there, so they are not like warm and competent us.

The SCM additionally explains the circumstances of specific groups by describing various subtypes. For example, U.S. generic images of immigrants feature low warmth and low competence, but closer examination reveals that this applies only to Latino and African immigrants, as well as undocumented ones, but not Asian immigrants (enviable) or most European immigrants (just like “us”) or Canadian immigrants (better than “us”). Even linguistic ability and generational status do not much improve images of immigrants (Lee & Fiske, 2006). Other examples of subtyped groups include gay stereotypes (Claussell & Fiske,

2005), male and female ones (Eckes, 2002), and black people's self-stereotypes (Fiske, Bergsieker, Russell, & Williams, 2009).

One structural lesson from these projects: The two dimensions specifically suggest separating power and status (Fiske, 2010; Fiske & Berdahl, 2007; Magee & Galinsky, 2008). Although power and status are often correlated, they are conceptually and psychologically separate. Status such as social class conveys prestige in society, one of the main divides between groups (Fiske & Markus, in press): Social class specifically results from a combination of education, income, background, and identity. Social class and other forms of status affect respect. This includes envy and admiration upward, but also contempt and pity downward (Fiske, 2011). The envy up can be invidious (vengeful) or benign (aspiration), just as contempt and pity are respectively negative or positive forms of scorn directed downward.

Our own studies illustrate. People report resentful envy upward, toward investment bankers, and smile with Schadenfreude when a banker sits in chewing gum or encounters other misfortunes (Cikara & Fiske, in press-b). But invidious envy can turn to empathic admiration when an out-of-work investment banker volunteers to help small business owners (Cikara & Fiske, in press-a). Likewise, people report disgust and contempt downward toward stereotypically lazy poor people, but more charitable feelings toward hardworking poor people (Russell & Fiske, under review). In both cases, status divides polarize into the alleged exploiters, either rich or poor (the default assumptions), versus the trustworthy ones, both rich and poor cooperators who contribute to the general good. Small wonder that trust is an issue between social classes (Fiske, Moya, Russell, & Bearn, in press).

On the other hand, distinct from status prestige (e.g., social class), sheer power results from actual control over valued resources, which creates separate dynamics, affecting who depends directly on whom. This is the second dimension, cooperation/competition=warmth-trustworthiness. The cooperative investment banker or hard-working poor person is warmer and more trustworthy than the default stereotypes for their groups. The cooperation-competition dimension defines interdependence, which mitigates status effects when cooperative, and exacerbates them when competitive. Power struggles over valued resources. Besides symmetrical cooperation-competition, a form of mutual power, there is asymmetrical power, wherein one depends on the other and potentially the other may exploit the one. Being in a powerful position makes people alert to and effective in achieving their own goals (Guinote, 2007; Slabu & Guinote, 2010), and it makes them prone to objectifying and stereotyping others (Fiske, 1993; Galinsky, Magee, Inesi, & Gruenfeld, 2006; Gruenfeld, Inesi, Magee, & Galinsky, 2008).

If social structure affects the social psychology of so many interpersonal and intergroup processes, why do we as scientists hesitate to go there? Some hesitate because social structure seems unwieldy, too macro; others because it seems too correlational or descriptive, not enough experimental control; still others because it seems too applied. Americans more than British and European social psychologists tend to have this concern about journeying to the macro edge of our discipline.

Journey to the Center of the Brain

Although many topics potentially overlap social structure—and neural structure consider how people adapt to status and power relations in every societal niche—it is social psychologists from the U.S. who have ventured more in this direction. Being social psychologists, they tend to take context into account more than, say, cognitive neuroscientists do. So, for example, both social and cognitive neuroscientists have

converged on the importance of the medial prefrontal cortex (mPFC) as part of a social cognitive system (Amodio & Frith, 2006; Mitchell, 2009; Mar, 2011; van Overwalle, 2009), although some questions remain (Harris, McClure, van den Bos, Cohen, & Fiske, 2007; van den Bos, McClure, Harris, Fiske, & Cohen, 2007; van Overwalle, 2011). Granted that the dependent measures (e.g., mPFC activation) derive from neuroscience, social psychologists provide the most emphatically social experimental variables.

To illustrate an issue that overlaps social structure with neural structures, the SCM sheds light on potential neural signatures of intergroup responses. If people have had to repeatedly solve the problems of status hierarchies and power relations, for example, some neural pathways should reflect this. Some of our work focuses on neural signatures that seem to reflect specific cooperative or uncooperative, high or low status SCM quadrants, and the mPFC apparently plays an important role here. For example, as noted, the low-low quadrant holds the most extreme outcasts (drug addicts, homeless people, migrant workers), and the social-cognition-sensitive mPFC uniquely *fails* to activate significantly to these kinds of people, although it activates to ingroups and to all other, less extreme outgroups (Harris & Fiske, 2006). The pattern would be consistent with seeing these people as less human than others (Leyens et al., 2003), and converging questionnaire studies support this interpretation (Harris & Fiske, 2009). However, when people have to consider, for example, a homeless person's individual preferences (what vegetable would he like?), the mPFC comes back on line (Harris & Fiske, 2007) to these allegedly disgusting outgroups. Interpersonal goals, which come from the immediate context, moderate social neural reactions (Wheeler & Fiske, 2005).

Envy too has a neutrally malleable profile, as a function of context. As indicated earlier, people's self-reports and recorded smiles veer from resentful envy to various forms of sympathy, depending on the high-status exploiter's context (default investment banker vs. exceptions, such as unemployed bankers who are now an admirable volunteer, a pitiful isolate, or a disgusting high-end drug user). Neural responses to envied outgroups vary as well (Cikara & Fiske, in press-a). Perhaps the most straightforward illustration involves sports fans of competing baseball teams (Cikara, Botvinick, & Fiske, 2011). Avid fans observing their reportedly envied rival lose to them or their own team beat the envied rival showed activation in neural areas previously implicated in reward processing, a demonstration of vicarious group-identity reward. The same areas also activated when their rival lost to a third team, perhaps a neural reflection of Schadenfreude.

Building on these studies of the low-low contemptible outgroups and the low-high envied outgroups, studies focused on the remaining SCM quadrants (pity, pride) are ongoing. What excites us about these approaches is the theoretically-driven clusters of outgroups eliciting predictable patterns of neural responses that converge with more traditional social psychology measures.

Two final projects return to our effort to understand the two basic dimensions of social structure in social cognition—status and interdependence—as triggering two separate kinds of process. Consistent with the importance of status, people valued the lives of high-status over low-status others in a hypothetical moral dilemma that involved trading off some lives against others (Cikara, Farnsworth, Harris, & Fiske, 2010). What's more, activated neural systems characteristic of difficult cognitive choices suggested that the (de)valuing of people by their status was not a knee-jerk response.

The other structural dimension, interdependence, required a different kind of scenario (Ames & Fiske, under review), but it returns to the mPFC, that neural center of social cognition. Participants made to feel outcome-dependent for a prize with one confederate expected to

work also with another on whom they were not outcome-dependent. Upon learning each confederate's expectations for success/failure and then receiving mixed information about both confederates, they were predicted to focus on expectancy-consistent information for the outcome-independent confederate—because her irrelevance made shortcut impressions acceptable—but expectancy-inconsistent information for the one who on whom they depended—because the impression mattered more to them. Prior research had indicated that people attend to and make dispositional attributions about the unexpected information regarding an outcome-controlling partner (e.g., Erber & Fiske, 1984). The mPFC activations showed exactly the pattern that earlier attentional and open-ended descriptions had predicted. What the neural data add are converging indicators less susceptible to conscious control. The relevance to intergroup processes is to examine the processes by which outcome-dependency (team work) gets people beyond category-based expectancies.

Potholes and Pitfalls

Moving to macro is easier than moving to micro, for several reasons: motivation, mores, and money. First, social psychologists are unlikely to be as motivated to move micro as macro because we chose our interpersonal and intergroup levels of analysis for good reasons, and we view more micro explanations as reductionist, determinist, and distant. How can social neuroscience avoid these pitfalls? The best research programs move back and forth between neural indicators and traditional social psychology measures (see Todorov, Fiske, & Prentice, 2011, for examples from a variety of labs). Our own work, as described here, never takes the neural signatures as the last word, or even as the first word, but simply one piece of the mutually informed puzzle-solving. The best social neuroscience correlates “behavioral” (i.e., traditional questionnaire) data with brain activations in independently defined regions of interest. One must avoid circular reasoning whereby the activation allegedly defines the then-inferred psychology (Vul, Harris, & Pashler, 2009), thereby capitalizing on chance, a classic psychometric proscriptio. In the better cases, independently validated methods define a region of interest such as within the socially-tuned mPFC from, for example, (a) meta-analyses across studies (Amodio & Frith, 2006; Mitchell, 2009; Mar, 2011; van Overwalle, 2009); (b) within one study, an independent localizer task that contrasts impression formation with memory instructions (e.g., Ames & Fiske, under review); (c) an independent variable that shows relevant neural differences (e.g., SCM quadrant), validated by correlations with theoretically predicted dependent variables (e.g., Harris & Fiske, 2011); or (d) using half the scanning runs to identify regions of interest and testing their correlates with predicted behavior on the other half of the scanning data (e.g., Cikara, Eberhardt, & Fiske, 2011). Ultimately, an interdisciplinary research program must move back and forth between methods, which requires a lot of motivation for the challenge.

Due to our mores, we rightfully mistrust losing the richness of our analyses for what seem to be oversimplified mechanistic analyses, but they have their role too, for those whose taste turns that way, and they are neither over-simplified nor mechanistic, in practice. Nor do the more micro analyses fail to interact with context, as our own field's social neuroscientists have repeatedly shown. What social psychology offers to neuroscience is a deep, nuanced understanding of what it means to be social. Primarily, this involves our awareness of context and how to invoke it. The distinction between an experimenter providing a reward and a computer doing it does matter to the mind and brain of participants (van den Bos et al., 2007). The distinction between a disgusting object and a disgusting person does matter for both mind and brain, even for this nonsocial emotion (Harris et al., 2007). Nonsocial reasoning recruits distinct brain areas, compared with thinking about another person's mind, experience, intentions, and predispositions (van Overwalle, 2011). Our mores favoring socially meaningful research make us necessary experts for social neuroscience.

External norms—mores—present another challenge, as the university and public status hierarchy favors the more micro, lower levels of analysis. It is amazing how the same finding reported with neuro-imaging data provokes far more interest in the media and over cocktails than do comparable questionnaire data.

Money is another, real issue. The biological level requires specialized equipment. Neuro-imaging is especially expensive. But so are random sample surveys, at the macro level. There are ways to find money, if not through admittedly hard-to-get grants, through collaboration with intrigued colleagues, to mutual benefit. More biological scientists might not have welcomed us in the old—days but more and more they realize that the most creative work involves such interdisciplinary efforts.

Finally, I would argue that social neuroscience is too important to leave to cognitive neuroscientists. We know a lot about the independent variables, about social motivation, cognition, context, relationships, and structures. We know how to design rigorous social experiments, and the dependent variable is only part of it. No one is saying we must do fMRI, EEG, TMS, or any other alphabet soup, but for those who are so inclined, the insight and adventure are worth the challenges.

Return Trip

Going to the boundaries of social psychology, whether the more macro social structures or the more micro neural structures, always brings us back home to core social psychological phenomena. Data from the frontiers are validated by more familiar indicators in the home discipline.

This article is not intended as a prescription, not, “go forth and do likewise.” Rather this is a report from the edgy, enlightening, and entertaining excursions that provide proof of concept: One can do this, and it’s a great ride.

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