SHRIEKING SIRENS: SCHEMATA, SCRIPTS, AND SOCIAL NORMS. HOW CHANGE OCCURS*

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Abstract: *This essay investigates the relationships among scripts, schemata, and social norms. The authors examine how social norms are triggered by particular schemata and are grounded in scripts. Just as schemata are embedded in a network, so too are social norms, and they can be primed through spreading activation. Moreover, the expectations that allow a social norm's existence are inherently grounded in particular scripts and schemata. Using interventions that have targeted gender norms, open defecation, female genital cutting, and other collective issues as examples, the authors argue that ignoring the cognitive underpinnings of a social norm can hamper the effectiveness of behavioral interventions.*

KEY WORDS: social norms, scripts, schemata, behavioral change, semantic networks

I. Introduction

"Labels of primary potency . . . act like shrieking sirens, deafening us to all finer discriminations that we may otherwise perceive"[1]

The social rules to which one adheres are largely dependent on how one interprets a situation and the actors' behavior within it. How one reads people's behavior, speech, general appearance, and the environment in which they are embedded informs one about how to appropriately respond. Upon recognizing a situation to be of a particular type (for instance, a wedding, a soccer game, a play), one simultaneously recognizes that certain actions are acceptable (or even praiseworthy) and others are not.[2] Social learning teaches people that they should not wear the tag of their shirt facing outward while in public, urinate in an elevator, or say "I love you" when greeting a stranger. As we learn the nature of particular situations and environments, we simultaneously learn which behaviors are appropriate, expected, or prohibited within them.

These behaviors often crystallize into shared behavioral rules that prescribe or proscribe behaviors within large classes of situations. These shared

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[1] Gordon Allport, *The Nature of Prejudice* (New York: Basic Books, 1979), 179.

[2] Cristina Bicchieri, *The Grammar of Society: The Nature and Dynamics of Social Norms* (New York: Cambridge University Press, 2006).

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rules are what we call social norms.[3] Social norms, as they are defined by Bicchieri,[4] can be understood as a sort of "grammar for social interactions" and are grounded in scripted sequences of behavior.[5] Like any linguistic grammar, social norms function as prescriptive rules. However, instead of dictating the way in which words are formed and ordered, social norms dictate the behavior that people are expected to engage in while in particular situations. All the behaviors regulated by norms are interdependent: the individual choice to adhere to a particular norm is conditional on what one expects others to do (empirical expectations) and what one expects others to think a person should do in such a situation (normative expectations). In fact, one prefers to follow a norm on condition of having such social expectations.[6] Having conditional preferences for following a norm implies that, were our social expectations to change, our conditions for following a social norm would cease to exist.[7]

Bicchieri[8] has already made it clear how important these social expectations (empirical and normative) are for the existence of a social norm. Once a group of individuals holds the aforementioned prerequisite social expectations and relevant preferences conditional on these expectations, then it is possible for a social norm to exist. But what triggers the prescriptive behavior that people follow once these conditions are met? What focuses people on a social norm relevant to their particular situation (as discussed by Cialdini[9])?

Most importantly, where do these critical social expectations come from? We do not constantly re-form new expectations upon encountering any new situation. Such a task is unrealistically daunting. We already have relevant expectations stored in memory that we activate when we encounter new situations; particular cognitive structures enable this activation process. This ability to call upon existing expectations when encountering novel situations allows for the activation and application of social[10] norms. In this essay, we aim to show the deep relationship that exists between social norms and certain cognitive structures. This relationship can explain the cognitive dynamics of norm change that has, up until now, been left unexamined.

What cognitive processes take place when one encounters a new situation that allow for a norm's activation? First, an agent must categorize

[3] Bicchieri, *The Grammar of Society*; James Samuel Coleman, *Foundations of Social Theory* (Cambridge, MA: Harvard University Press, 1994); Jon Elster, "Social Norms and Economic Theory," *Journal of Economic Perspectives* 3, no. 4 (1989): 99–117.

[4] Bicchieri, *Grammar of Society*.

[5] Cristina Bicchieri and Ryan Muldoon, "Social Norms," *Stanford Encyclopedia of Philosophy*, ed. Edward N. Zalta (Stanford, CA: Center for Study of Language and Information, 2011), para 1.

[6] Bicchieri, *Grammar of Society*, chap. 1.

[7] This will not be the case with a moral norm, where preferences for following such a norm are typically socially unconditional.

[8] Ibid.

[9] Robert B. Cialdini, Raymond R. Reno, and Carl A. Kallgren, "A Focus Theory of Normative Conduct: Recycling the Concept of Norms to Reduce Littering in Public Places," *Journal of Personality and Social Psychology* 58, no. 6 (1990): 1015–26.

[10] Most of what we are saying will also apply to descriptive norms.

a new situation as being of a particular type, which in turn prompts the activation of a relevant schema, or, in the case of behavioral rules, a relevant script. As we will discuss later, scripted interactions comprise social expectations, both empirical and normative. In any new situation, once a schema or a script is activated, expectations about typical behaviors (empirical expectations) will in turn be activated as well as expectations (if relevant) about appropriate behaviors (normative expectations). The social expectations that social norms are based on are grounded in these scripts.

The process of categorizing a new situation, and eliciting a script or a schema is extremely sensitive to subtle environmental clues that tip one off to its nature. Behavioral economists are often quick to assume that variance in behavior in very similar economic games is due to the elicitation of different norms. Our approach goes beyond this simple assumption and investigates the cognitive dynamics that drive the activation of different scripted interactions (and hence different norms).

Understanding the cognitive structures within which norms are embedded is crucial to understand how norms can change. The dynamics of norm change is highly complex, and we focus on one important and necessary element of such change. The novelty of our work lies not only in the proposed connection among social norms, schemata, and scripts, but also in providing guidance for how to enact a change, at least from a cognitive viewpoint. Even seemingly small changes to scripts and schemata can have a major impact on catalyzing broader norm change. We argue that in order to be truly effective, interventions aimed at changing harmful or maladaptive collective practices (such as child marriage, racial discrimination, corruption, or codes of silence) should take into account the cognitive underpinnings of social norms in their designs.

In the coming sections, we first discuss literature on scripts, schemata, and the semantic networks in which they are embedded to better understand their relationship with social norms. In doing so, we explore norm activation in more detail. We next discuss insights on schema change to highlight specific mechanisms by which norms themselves may be changed. To demonstrate the relevance of the relationships among scripts, schemata, and social norms, we end by discussing the cognitive relationships we have outlined in relation to past interventions (both intentional and incidental) and how their impact (or lack thereof) on scripts and schemata likely influenced their efficacy. Current and new policy interventions are increasingly aware of the importance of understanding the nature of social norms, since norms can enhance or prevent effective social, political, and economic interventions.[11] In this respect, our analysis offers insights into how effective social norms interventions should be designed.

[11] World Bank, *World Development Report 2015: Mind, Society, and Behavior* (Washington, DC: World Bank, 2015) doi: 10.1596/978-1-4648-0342-0. License: Creative Commons Attribution CC BY 3.0 IGO

II. Schemata and Semantic Networks

In what follows, we will discuss the nature of schemata and the cognitive networks in which they are embedded, and the ways in which their nature has implications for how norms are activated. Schemata are generic knowledge structures that help people interpret the world around them.[12] The more elements of a schema that we observe, the more likely that schema will be activated.[13]

The fewer elements relevant to a schema that one observes or the less prototyptical the elements are, the less likely it is that the schema will be activated. A prototype is the "standard" conceptualization of a particular kind, category, or phenomenon.[14] The closer something is to its prototype, the more input variables would be present for the affiliated schema, and the more likely the schema would be activated.[15] An understanding of prototypes is useful when understanding how to measure or change a schema. Even if something is relatively far from the prototype, we still are quite capable of processing it through existing schemata, up to a certain point.[16]

Schemata serve as tools that people use to extract the maximal useful information from an environment using the least amount of effort.[17] When certain elements of a person, object, environment, or event are not readily observable, the remaining information is "filled in" based on any schemata that are used to process the situation.[18] Oftentimes, objects, people, and events can be viewed through multiple schematic lenses, and which lens

[12] Susan Fiske and Shelley Taylor, *Social Cognition* (London: Sage, 1991); Jean Piaget, "Piaget's Theory," in *Piaget and His School*, ed. Charles Zwingmann, Bärbel Inhelder, and Harold Chapman (New York; Berlin: Springer, 1976), 11–23; David Rumelhart, "Schemata: The Building Blocks of Cognition," in Rand Spiro, Bruce Bertram, and Willian Brewer, eds. *Theoretical Issues in Reading Comprehension: Perspectives from Cognitive Psychology, Linguistics, Artificial Intelligence, and Education* (Abingdon, UK: Routledge, 1980); David Rumelhart, "The Architecture of Mind: A Connectionist Approach," *Mind Readings* (1998): 207–238; David Rumelhart, James McClelland, and the PDP Research Group, *Parallel Distributed Processing: Explorations in the Microstructures of Cognition*, vol. 1 (Cambridge, MA: MIT Press, 1986); Asghar Iran-Nejad, and Adam Winsler, "Bartlett's Schema Theory and Modern Accounts of Learning and Remembering," *Journal of Mind and Behavior* 21, nos. 1-2 (2000): 5–35.

[13] Sucheta Nadkarni and Vadake K. Narayanan, "Strategic Schemas, Strategic Flexibility, and Firm Performance: The Moderating Role of Industry Clockspeed," *Strategic Management Journal* 28, no. 3 (2007): 243–70; Rumelhart et al., *Parallel Distributed Processing*.

[14] Eleanor Rosch, "Natural Categories," *Cognitive Psychology* 4, no. 3 (1973): 328–50; "Principles of Categorization," in Eleanor Rosch and Barbara Lloyd, eds., *Cognition and Categorization* (Hillsdale, NJ: Elbaum, 1978), 189–206.

[15] Eleanor Rosch, Carol Simpson, and R. Scott Miller, "Structural Bases of Typicality Effects," *Journal of Experimental Psychology: Human Perception and Performance* 2, no. 4 (1976): 491; Elaine L. Kinsella, Timothy D. Ritchie, and Eric R. Igou, "Zeroing in on Heroes: A Prototype Analysis of Hero Features," *Journal of Personality and Social Psychology* 108, no. 1 (2015): 114–27.

[16] Piaget, "Piaget's Theory"; Rumelhart et al., *Parallel Distributed Processing*.

[17] Rosch, "Principles of Categorization."

[18] Ibid.; Jennifer Crocker, Susan T. Fiske, and Shelley E. Taylor, "Schematic Bases of Belief Change," in *Attitudinal Judgment*, ed. J. Richard Eiser (New York: Springer, 1984), 197–226.

one opts for will shift one's interpretation of future stimuli and memory of past stimuli.[19]

The capacity for multiple schemata to be activated in response to the same stimuli has a direct relationship with the capacity for multiple social norms to be activated in response to the same situation. In a trust game, trustees might be motivated to reciprocate out of a motivation to either reciprocate or to create equality.[20] Depending on how one interprets the situation, subjects could either decide that reciprocation or equality is more important, ultimately resulting in completely different decisions. In this respect, changing such schematic lenses can alter which specific norm is activated.

As is implied by the connectionist underpinnings of schema theory,[21] individual scripts and schemata do not exist in isolation; they are inherently linked to each other to varying degrees, and the activation of one influences the activation of another. The entirety of one's interconnected schemata is termed a semantic or associative network.[22] A semantic network is a model of conceptual interconnectivity, with each individual schema serving as a node, and each relationship between schemata represented as a link of varying strengths. Chronic activation of multiple schemata in tandem will increase the strength of their associative links.

The interconnected nature of schemata and the semantic networks in which they are embedded influences both perception and behavior. When one schema is activated, other schemata with which it is associated are simultaneously primed for activation.[23] This process is known as spreading activation.[24] This interconnected nature of schemata implies that social norms, which may be triggered by schemata, may in turn be indirectly activated through spreading activation.

Though a schema may, in theory, exist in isolation, practically speaking, it exists in relation to many other schemata. These cognitive relationships influence the likelihood of a schema being relevant to one situation or

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[19] Crocker, Fiske, and Taylor, "Schematic Bases of Belief Change"; Ashgar Iran-Nejad and Adam Winsler, "Bartlett's Schema Theory and Modern Accounts of Learning and Remembering," *Journal of Mind and Behavior* (2000): 5–35; Naohisa Mori, "The Schema Approach: A Dynamic View on Remembering," in *Dynamic Process Methodology in the Social and Developmental Science* (New York: Springer, 2009), 123–40.

[20] Erte Xiao and Cristina Bicchieri, "When Equality Trumps Reciprocity," *Journal of Economic Psychology* 31, no. 3 (2010): 456–70.

[21] Rumelhart et al., *Parallel Distributed Processing: Vol 1.*

[22] Allan M. Collins and Elizabeth F. Loftus, "A Spreading-Activation Theory of Semantic Processing," *Psychological Review* 82, no. 6 (1975): 407; Allan M. Collins and M. Ross Quillian, "Retrieval Time from Semantic Memory," *Journal of Verbal Learning and Verbal Behavior* 8, no. 2 (1969): 240–47; William Woods, "What's in a Link: Foundations for Semantic Networks," *Representation and Understanding: Studies in Cognitive Science* (1975): 35–82.

[23] Itamar Lerner, Shlomo Bentin, and Oren Shriki, "Spreading Activation in an Attractor Network with Latching Dynamics: Automatic Semantic Priming Revisited," *Cognitive Science* 36, no. 8 (2012): 1339–1382.

[24] Collins and Loftus, "Spreading-Activation Theory of Semantic Processing."

another, and as such, the situation in which a schema is activated will influence its ability to aid cognition. However, due to the fact that each individual's schemata are influenced by his or her own unique semantic networks and personal experiences, a schema for a given phenomenon will often vary across individuals. Research suggests that in addition to this individual variability among schemata, domain-specific knowledge within an individual will influence which strategies she uses when taking in new information.[25] Due to this dynamic relationship, a particular individual's reaction to a given situation is influenced by more than just the composition of relevant schemata, and this variability may be amplified across individuals.

III. Cultural Schemata, Social Schemata, Scripts, and Social Norms

Social interaction and shared experiences drive people within a culture to construct certain schemata in similar and converging manners.[26] Technically, anyone's schemata are unique unto him- or herself, but many lay schemata are largely shared within a culture. Schemata that are shared within a culture are more resistant to change, as they are continually reinforced through social interaction.[27] The degree to which a schema is collectively held will strongly influence how effective (and necessary) an intervention designed to change it will be.

Evolutionary-driven propensities and cultural pressures drive people to attend to and process certain clusters of stimuli over others.[28] One example of this tendency that is particularly relevant to social norms is social schemata. Allport once described social categories[29] as "exceedingly salient and powerful. They tend to prevent alternative classification, or even cross-classification . . . 'labels of primary potency' . . . act like shrieking sirens, deafening us to all finer discriminations that we might otherwise perceive."[30]

The schemata through which we cognitively process individuals have a considerable influence on how we perceive people and their actions. Consider gender roles. If women are associated with characteristics such as nurturing, caring, selflessness, and so forth, people will expect that

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[25] Ravit Golan Duncan, "The Role of Domain-Specific Knowledge in Generative Reasoning about Complicated Multileveled Phenomena," *Cognition and Instruction* 25, no. 4 (2007): 271–336.

[26] Ronald W. Casson, "Schemata in Cognitive Anthropology," *Annual Review of Anthropology* (1983): 429–62; Roy Goodwin D'Andrade, "The Cultural Part of Cognition," *Cognitive Science* 5, no. 3 (1981): 179–95; Claudia Strauss and Naomi Quinn, *A Cognitive Theory of Cultural Meaning*, Vol. 9 (Cambridge: Cambridge University Press, 1997).

[27] Strauss and Quinn, A Cognitive Theory of Cultural Meaning.

[28] Rosch, "Natural Categories."

[29] He was specifically referring to ethnic categories when he said this, but we think his quotation applies to social categories and social schemata in general.

[30] Allport, *The Nature of Prejudice*, 179.

they act in line with these characteristics, and any deviation from what is considered "normal" will be accompanied by specific causal attributions, emotional reactions, and appropriate actions. Domestic violence is not necessarily the result of a male's sudden, irrational outburst of rage. It is often instead the result of a chain of inferences that are triggered by the violation of a schema that is perceived as natural and "right." If a prototypical "good wife" is expected to take care of her husband, obey him, have children and take good care of them, be nurturing and compliant, any violation of the schema will elicit a causal attribution. If the "abnormal" behavior has no other explanation, a woman might be perceived as rebellious, disrespectful, and mean. The husband's perceivably "legitimate" (normative) expectations have been violated, and anger is the appropriate emotion. Domestic violence is thus "justified" by the violation of what appear to be legitimate and normal expectations. It is important to explicitly note how social expectations can be grounded in a social schema (in the previous example, a "good wife"). One has expectations about what particular groups of people do and what members of one's group think they should do; when one identifies someone as belonging to a particular group, these expectations are elicited.

In addition to their relationship with schemata, social norms are also grounded in scripts. A script is, in its most basic form, a schema for an event, with varying levels of specificity.[31] We engage in scripts upon the activation of situational triggers that inform us what chains of behaviors to engage in. We identify and process these triggering factors through other schemata.[32] For example, the "good wife" schema incorporates several scripts having to do with what sort of specific behaviors are expected from a wife: how and when she should prepare food, how often she should have sex with her husband, the things she should say, how she should interact with the neighbors, and so on.

The "appropriate behaviors" that are expected of a "good wife" are the elements of a script that are tied to social norms. Empirical expectations inform us of what people usually do and expect us to do, and normative expectations inform us of what people think we "should" do. These expectations help shape the strength of how prescriptive a scripted set of behaviors is. Without normative expectations, a script could be seen as a sequence of actions in which one *could,* and typically does, engage. With the presence of both empirical and normative expectations, the same script in the same situation becomes a sequence of actions in which one *should*, and typically does, engage. In these respects, specific scripts have the capacity to harbor social expectations, just as broader social schemata do.

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[31] Robert P. Abelson, "Psychological Status of the Script Concept," *American Psychologist* 36, no. 7 (1981): 715; Roger C. Schank and Robert P. Abelson, *Scripts, Plans, Goals, and Understanding: An Inquiry into Human Knowledge Structures* (Hillsdale, NJ: Lawrence Erlbaum Associates, 2013 [1977]).

[32] Bicchieri, *Grammar of Society*.

If someone were to fail to tip a waiter while serving in the "customer" role of a "restaurant" script while in a culture in which most people think one *should* tip the waiter, then a third party's disdain or indignation in reaction to the script deviation would feel justified, just as a man who feels that his wife has violated his "good wife" schema might feel justified in getting angry at her. However, if a restaurant-goer were to deviate from the "restaurant" script by failing to "read the menu" or "sit down," (both common action elements in the "restaurant" script in which one *could*, rather than *should*, engage), it might seem strange to third parties, but they would not react to it with the same emotional intensity as they would if the restaurant-goer were to deviate from a *should* element.

As in the case with schemata, the same situation can often be responded to with a variety of potential scripts, especially when the situation is ambiguous.[33] For example, players in an economic game may interpret the same game in different ways, depending on what the game reminds them of most. More colorful evidence is provided in a simple dictator game, in which subjects were much more likely to behave selfishly when told that they were playing the "Wall Street Game," but they were much more likely to be generous when told that they were playing the "Community Game."[34] The provision of these two different labels for the same game served to activate completely different scripts. The abstract process that the dictator game entails was seen through dramatically different schematic lenses for subjects in each condition. Individuals categorizing particular situations will search for explanatory cues in the environment and attempt to match them up with the most similar categories that they have stored in memory. This matching process will inform which schemata and scripts are activated and by extension which norms may be elicited.

Henrich and colleagues[35] provide particularly compelling evidence of the effect that different schematic interpretations can have on behavior. They recruited members of many small-scale societies across the world to engage in a series of economic games, and respondents' behavior varied wildly from culture to culture. The participants were not treating these games as the abstract exchanges that they were—instead, they were attempting to process them through the most appropriate schematic lenses that they had available. As these schematic lenses varied from society to society, so too did participants' behavior. The Orma, for example, recognized that the public goods game was similar in nature to the *harambee*, a community-driven way to contribute to a public good, and thus contributed

[33] Kenneth Bettenhausen and J. Keith Murnighan, "The Emergence of Norms in Competitive Decision-Making Groups," *Administrative Science Quarterly* 30, no. 3 (1985): 350–72.

[34] Varda Liberman, Steven M. Samuels, and Lee Ross, "The Name of the Game: Predictive Power of Reputations versus Situational Labels in Determining Prisoner's Dilemma Game Moves," *Personality and Social Psychology Bulletin* 30, no. 9 (2004): 1175–1185.

[35] Joseph Patrick Henrich et al., *Foundations of Human Sociality: Economic Experiments and Ethnographic Evidence from Fifteen Small-Scale Societies* (New York: Oxford University Press, 2004).

generously. On the other hand, the Au and Gnau of Papua New Guinea both provided *and rejected* large offers in the ultimatum game. For them, gift-giving is a status-seeking mechanism, and accepting gifts entails a strong obligation to reciprocate (with unrepaid debts resulting in a diminished social status), so a simple monetary proposal in the ultimatum game was rebranded by the heavy cultural baggage of obligation and reciprocation.

By focusing on the Maasai concept of *osotua*, Cronk[36] demonstrates that even within the *same* culture, simple cues can lead to different interpretations of the same interaction. In Maasai culture, osotua is commonly accepted to be a long-term gift-giving relationship that is based on obligation and respect and is very difficult to break. When the game was directly framed as an "osotua game," Maasai players both gifted and returned significantly less than if the game had no such frame. Moreover, the number of players expected to be gift recipients was also less when the osotua cue was present. Presumably, when told "this is an osotua game," players' osotua schema was activated and used to interpret the otherwise ambiguous interaction, thus making them more hesitant to enter what they saw to be an osotua relationship rather than a neutral monetary exchange.

Recognizing the rich variety of ways that different schemata can lead us to interpret our world is very important, and failing to do so has doomed past interventions designed to change harmful practices to failure. For example, the nature and treatment of certain childhood diseases for residents of Lubumbashi, Zaire (now the Democratic Republic of the Congo) differs considerably from the contemporary biomedical approach.[37] What a doctor might classify as diarrhea could be classified in six distinct ways (and therefore as six different diseases) by locals, depending on their perceived symptoms. Though all six disease classifications featured loose stool as a central symptom, what a doctor would generically describe as diarrhea only coincides with one of the very specific classifications held by local residents. Many of these finer classifications included specific cues that a foreign doctor would consider irrelevant. Due to the fact that health organizations' descriptions of diarrhea only matched with Kuhara, when such organizations attempted to inform residents of Lubumbashi about the appropriate treatment for diarrhea, locals likely interpreted the advice to be only relevant to Kuhara and not to any of their other diarrheal classifications. Indeed, respondents readily reported giving the appropriate diarrheal treatment to cases of Kuhara but not in response to the other five diagnoses.

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[36] Lee Cronk, "The Influence of Cultural Framing on Play in the Trust Game: A Maasai Example," *Evolution and Human Behavior* 28, no. 5 (2007): 352–58.

[37] Stanley Yoder, "Examining Ethnomedical Diagnoses and Treatment Choices for Diarrheal Disorders in Lubumbashi Swahili," *Medical Anthropology* 16, nos. 1-4 (1994): 211–47.

Situational trigger cues may orient people toward different expectations (which may be empirical or normative), and by extension, different norms. In one experiment on littering norms,[38] researchers stuffed flyers into the mailboxes of students and fixed up a mailroom so that the floor was either littered with trash, completely clean, or clean with the exception of a single partly eaten watermelon rind. In the messy condition, people tended to throw their own unwanted flyers on the ground (likely as it was obvious that the cleanliness script was not appropriate), while in the clean condition, people followed suit and were reasonably clean themselves. Interestingly, subjects were the cleanest in the condition where the mailroom was clean except for the half-eaten watermelon.

Though the clean and dirty environments served as cues for how collectively important a norm of cleanliness was, the watermelon rind was the most effective trigger cue of all. The single piece of garbage stood out in such contrast to the otherwise clean environment that it was likely difficult *not* to think about the behavior of the one messy person who ruined the whole mailroom—this violation called the strongest attention to the *should* element in a cleanliness script. Not only does this particular experiment serve as a demonstration that not all trigger cues are "created equal," but also that a norm can be activated in a variety of ways. For example, seeing someone shout obscenities at a beggar could have the contrary effect of boosting the likelihood of donating for an observer. Viewing a norm transgression calls attention to the norm itself, thereby making it more likely to be activated in the observer.[39] Such a norm transgressor can indirectly serve as a triggering cue for a norm of, say, beneficence.[40]

Social norms, like schemata, might be cognitively organized in a network, and thus the activation of one will influence the activation of another.[41] Cialdini and colleagues[42] provide support for this idea experimentally by placing flyers on the windshields of strangers returning to their car. The flyers advertised a variety of messages, and the semantically closer each individual message was to the norm of not littering (for example, a flyer encouraging recycling as opposed to a flyer encouraging voting), the less likely the recipient was to throw the flyer on the ground. The stronger the association between the flyer's message and littering, the more likely one's norm of not littering was to be activated, likely via spreading activation.

[38] Cialdini et al., "A Focus Theory of Normative Conduct."

[39] Bicchieri, *Grammar of Society*; Michael D. Harvey and Michael E. Enzle, "A Cognitive Model of Social Norms for Understanding the Transgression–Helping Effect," *Journal of Personality and Social Psychology* 41, no. 5 (1981): 866–75.

[40] Jacqueline Macaulay, "A Shill for Charity," in Jacqueline Macaulay and Leonard Berkowitz, eds., *Altruism and Helping Behavior* (Cambridge, MA: Academic Press 1970), 43–59.

[41] Harvey and Enzle, "A Cognitive Model of Social Norms."

[42] Cialdini et al., "A Focus Theory of Normative Conduct."

Another set of experiments further supports the hypothesis that norms can be activated via spreading activation.[43] In the experiments, all participants were shown images of a location (such as a library) and some were told they were later going to visit it. They all then viewed a series of twenty-four words and decided as quickly as possible which words were real and which were made up. Both seeing the images of the library and intending to visit it appeared to activate "library" schemata: completing both of these tasks enabled participants to identify words more quickly if they were linked to the normative behavior of being silent (such as *silent*, *quiet*, *still*, and *whisper*). More interestingly, subjects under these same conditions also spoke with a significantly lower volume than other subjects.

It should be clear that norms share a close and complex relationship with scripts and schemata. By changing the scripts and schemata through which people understand social interactions or reconfiguring the semantic networks in which such schemata are embedded, one could theoretically change what people consider "appropriate" and thereby change the associated social norm(s). Examples from behavioral economics (though they do not openly theorize about social norms and related scripts' influence on behavior) provide evidence of this phenomenon with respect to different interpretations of fairness.[44] This change in perception of what is appropriate could similarly be accomplished by creating novel schemata and shifting what scripts and schemata one typically relies upon when understanding social situations.

IV. Script and Schema Change

"There is nothing so obdurate to education or criticism as the stereotype."[45] The same can be said of schemata in general. Most research on social schemata has emphasized schemata's ability to assimilate schema-discrepant information and resist change.[46] As we argue that social norms are embedded into scripts, the possibility of changing scripts and schemata is of foremost importance in an analysis of norm change. Fortunately, schema change is possible. Certain schemata are easier to change than others, and there are several theoretical models of how this can be accomplished.

[43] Henk Aarts and Ap Dijksterhuis, "The Silence of the Library: Environment, Situational Norm, and Social Behavior," *Journal of Personality and Social Psychology* 84, no. 1 (2003): 18–28.

[44] See Bruno Frey and Iris Bohnet, "Institutions Affect Fairness: Experimental Investigations," *Journal of Institutional and Theoretical Economics (JITE)/Zeitschrift für die gesamte Staatswissenschaft* 151, no. 2 (1995): 286–303. See also Elizabeth Hoffman et al., "Preferences, Property Rights, and Anonymity in Bargaining Games," *Games and Economic Behavior* 7, no. 3 (1994): 346–80.

[45] W. Lippmann, *Public Opinion* (New York: Harcourt-Brace, 1922), 99.

[46] Rupert Brown, *Prejudice: Its Social Psychology* (Chichester, UK: John Wiley and Sons, 2011); Crocker et al., "Schematic Bases of Belief Change"; James Hilton and William Von Hippel, "Stereotypes," *Annual Review of Psychology* 47, no. 1 (1996): 237–71.

When perceived stimuli and existing schemata do not match perfectly, there are two ways to resolve the conflict: assimilation or accommodation. [47] As it first develops, a new schema is loose and vague.[48] As we accumulate new experiences, we either assimilate the new information and cast aside the discrepancies or accommodate it by refining the schema and change its boundaries. Information that confirms an existing schema reinforces it and makes it even more difficult to change in the future.[49] The more nuanced and well-established a schema is, the better able one is to ignore disconfirmatory evidence.

Some schemata can easily be disconfirmed through simple observation. However, not all elements of schemata are so objectively verifiable.[50] Social schemata and stereotypes, in particular, are highly subject to interpretation, more capable of assimilation, and thus more resistant to change.[51]

In addition to the subjective nature of social schemata, there are several biases that can hamper the process of schema revision. Due to biases like the confirmation bias and motivated reasoning,[52] people often attend to and remember schema-consistent information (with some exceptions), especially when they find it undesirable to reject the schema. A similar process hampers social norm change. As people might have personal investments in particular maladaptive norms (as will be discussed later), anticipating and taking steps to avoid potential biases like motivated reasoning and confirmation bias will help keep an intervention to change a norm effective.

A. Specific models of schema change

There are several theoretical models of schema change, and there are certain circumstances under which schema change is more likely than others.[53] Most empirical work on schema change has been performed in the specific

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[47] Piaget, "Piaget's Theory."

[48] Jean Piaget, "Part I: Cognitive Development in Children: Piaget Development and Learning," *Journal of Research in Science Teaching* 3 (1964): 176–86.

[49] Jean Matter Mandler, *Stories, Scripts, and Scenes: Aspects of Schema Theory* (New York: Psychology Press, 2014).

[50] Crocker et al., "Schematic Bases of Belief Change."

[51] This proves to be particularly problematic for social norms, as the stimuli that activate a norm are often highly social in nature

[52] Patricia Devine, Edward R. Hirt, and Elizabeth M. Gehrke, "Diagnostic and Confirmation Strategies in Trait Hypothesis Testing," *Journal of Personality and Social Psychology* 58, no. 6 (1990): 952; Raymond S. Nickerson, "Confirmation Bias: A Ubiquitous Phenomenon in Many Guises," *Review of General Psychology* 2, no. 2 (1998): 175; Ziva Kunda, "The Case for Motivated Reasoning," *Psychological Bulletin* 108, no. 3 (1990): 480.

[53] William J. Brown, "Prosocial Effects of Entertainment Television in India," *Asian Journal of Communication* 1, no. 1 (1990): 113–35; Crocker et al., "Schematic Bases of Belief Change"; Miles Hewstone, Nicholas Hopkins, and David A. Routh, "Cognitive Models of Stereotype Change: (1). Generalization and Subtyping in Young People's Views of the Police," *European Journal of Social Psychology* 22, no. 3 (1992): 219–34; Miles Hewstone, Lucy Johnston, and

realm of stereotype change. Understanding these models will help inform how schemata that guide and trigger social norms can arise and change.

The most prominent models of schema change are the bookkeeping model, the conversion model, and the subtyping model.[54] Some models are thought to be more appropriate under certain circumstances. The arguably intuitive bookkeeping model asserts that people continuously update their schemata whenever they encounter discrepant information.[55] A few instances of discrepant information will not change one's schemata much, but in aggregate, many instances will. The more dramatic conversion model asserts that a few highly salient instances of discrepant information will catalyze the process of schema revision.[56] Instead of many instances of mildly schema-discrepant information resulting in many minor revisions to one's schema, the conversion model asserts that the observation of a few highly salient schema-discrepant instances will trigger a single, sudden revision. Finally, the subtyping model asserts that the observation of schema-discrepant information will not cause one to revise one's overall schema at all but rather induce one to create a new, subschema that is capable of "explaining" the discrepancy.[57] This new schema is a specific subcategory of the original schema, and it is tailored to the class of observed information that is discrepant with the original schema.

Empirical evidence has been found to support all three models of schema change to varying degrees. Support for the conversion model is provided in a study in which participants read descriptions of three members of the same sorority.[58] In one condition all three members were described to be mildly discrepant from the common "sorority" stereotype, or, in another condition, just one member was described to be highly discrepant. When subjects rated a fourth member of the sorority on her likely qualities, being presented with the single "glaring exception" resulted in more stereotype change than being presented with all three mildly discrepant members.

Peter Aird, "Cognitive Models of Stereotype Change: (2) Perceptions of Homogeneous and Heterogeneous Groups," *European Journal of Social Psychology* 22, no. 3 (1992): 235–49; Sarah Queller and Eliot R. Smith, "Subtyping versus Bookkeeping in Stereotype Learning and Change: Connectionist Simulations and Empirical Findings," *Journal of Personality and Social Psychology* 82, no. 3 (2002): 300; Myron Rothbart, "Memory Processes and Social Beliefs," in David Hamilton, ed., *Cognitive Processes in Stereotyping and Intergroup Behavior* (Hillsdale, NJ: Erlbaum 1981), 145–81; Renee Weber and Jennifer Crocker, "Cognitive Processes in the Revision of Stereotypic Beliefs," *Journal of Personality and Social Psychology* 45, no. 5 (1983): 961.

[54] Crocker et al., "Schematic Bases of Belief Change."

[55] Rothbart, "Memory Processes and Social Beliefs." See also: David E. Rumelhart and Donald A. Norman, "Accretion, Tuning and Restructuring: Three Modes of Learning," in J. W. Cotton and R. L. Klatskey, eds., *Schematic Factors in Cognition* (Hillsdale, NJ: Earlbaum 1978).

[56] Rothbart, "Memory Processes and Social Beliefs."

[57] Hewstone et al., "Generalization and Subtyping in Young People."

[58] Sharon Gurwitz and Kenneth A. Dodge, "Effects of Confirmations and Disconfirmations on Stereotype-Based Attributions," *Journal of Personality and Social Psychology* 35, no. 7 (1977): 495.

In contrast to the previously mentioned results, Weber and Crocker[59] compared all three models and found empirical support for the bookkeeping and subtyping model but little support for the conversion model.[60] In their first experiment, subjects were presented with descriptions of either lawyers or librarians in groups of either six or thirty. Schema-discrepant information was either concentrated in a few individuals or dispersed across many individuals. Subjects rated how typical each characteristic was of the overall group and provided an open-ended description of a new, unknown lawyer or librarian. When many example individuals displayed non-stereotypical behavior, subjects exhibited the strongest stereotype reduction, especially when presented with thirty rather than six examples, indicating that the bookkeeping model was at work. In a follow-up experiment, the authors varied the "extremeness" of a schema-discrepant piece of information. This variation had little impact on how stereotypical the recalled information was, suggesting that subjects explained the unusual behavior away as "exceptions to the rule" through subtyping. Weber and Crocker acknowledged that the conversion model might apply when subjects do not have well-established schemata. That is, when one is unsure of the general characteristics of a prototype, a single piece of evidence could be treated as highly informative.

It is important to address why subtyping prevents schema change in some circumstances and not others. One proposed explanation is that the discrepant members in some cases are simply *too* atypical, thereby making the classification of them as "exceptions" more reasonable.[61] Indeed, multiple regression analyses[62] suggested that the perceived typicality of stereotype disconfirmers mediated the degree to which an overall stereotype changed. Individuals judged slight disconfirmers to be more typical than strong disconfirmers, and thus the slight disconfirmers had a greater impact on the subjects' overall stereotypes.

Given schema theory, the proposed relationship between the prototypicality of a disconfirmer and the degree to which a schema changes makes sense. If something is only mildly prototypical, the associated schema will be activated less fully. The observation of a new pattern of behavior that only partially overlaps with an existing schema may give rise to a related yet separate schema. This reasoning explains why raising the extremeness of the discrepant qualities in Weber and Crocker's second experiment[63] failed to lead to further schema revision—the discrepant members were

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[59] Weber and Crocker, "Revision of Stereotypic Beliefs."

[60] For similar results, see Hewstone et al., "Perceptions of Homogenous and Heterogeneous Groups."

[61] Lucy Johnston and Miles Hewstone, "Cognitive Models of Stereotype Change: 3. Subtyping and the Perceived Typicality of Disconfirming Group Members," *Journal of Experimental Social Psychology* 28, no. 4 (1992): 360–86.

[62] Ibid.

[63] Weber and Crocker, "Revision of Stereotypic Beliefs."

likely seen as more atypical (and thus easier to subtype), thereby preserving the overarching schema of "librarian" or "lawyer." For this reason, when attempting to change a schema (or, by extension, a related social norm), measuring a prototype will be an important early step to take.[64]

Another dimension that influences a schema's susceptibility to change is how homogenous the associated class is perceived to be. The more homogenous a category is, the more difficult it will be to subtype members of the category. A homogenous group has few "unusual members" by definition. If the perception of group homogeneity does not change, then logically, either the outlier must be perceived to be a member of a separate class (that is, be processed through separate schemata) or the schematic understanding of the class as a whole must change.

Although the activation of alternative schemata can prevent a schema of interest from changing, the availability of alternative schemata can be used to one's advantage when attempting to induce schema change. Crocker and colleagues[65] discuss how schemata are abandoned, rather than revised, only when there is an available alternative to replace it.[66] Even if one is aware that a mode of understanding a phenomenon is flawed, one still needs to understand it, and a flawed understanding is better than no understanding.

B. The role of semantic networks in norm activation and change

In addition to changing the schemata that, when activated, serve as trigger cues to particular social norms, one can also theoretically influence a social norm's activation by creating new links between existing schemata in its semantic network. Little theoretical work has been conducted on the relation between norm activation and associated elements within its semantic network. Regardless, we believe such expansion of the semantic network is possible.

This expansion could be made possible by creating a novel schema and associating it with the social norm of interest, thereby creating a new trigger cue for the norm. In creating a new trigger cue, the circumstances under which a norm applies would be expanded. Take the example of the debate about whether a firm is only responsible toward its shareholders or also to stakeholders who the firm may harm through negative externalities (for example, pollution). Initially, the firm may only believe that a responsibility

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[64] We consider a "prototype analysis" to be the best way to measure a schema. Such measurement will be important when attempting to determine the structure of a schema for a population and the degree to which such a structure is shared. For example of work using prototype analysis, see: Beverley Fehr, "Prototype Analysis of the Concepts of Love and Commitment," *Journal of Personality and Social Psychology* 55, no. 4 (1988): 557–79.

[65] Crocker et al., "Schematic Bases of Belief Change."

[66] In fact, cognitive therapy largely relies on alternative schemata as replacements when attempting to reduce reliance on maladaptive ones. See Christine Padesky, "Schema Change Processes in Cognitive Therapy," *Clinical Psychology & Psychotherapy* 1, no. 5 (1994): 267–78.

script applies to shareholders, but protests and governmental interventions make it clear that the firm also has a responsibility to communities that it affects. Effectively, these protests and interventions serve to form a new link between the existing responsibility script and a population of stakeholders. This is an example of how by broadening a script, one can change behavior by expanding the domain in which a norm is thought to be applied.

Similarly, the association of two originally unrelated norms could influence their respective likelihood of activation. As mentioned earlier, the activation of one norm (for instance, "recycling" and, to a lesser extent, "voting") primes a related norm ("not littering") for activation.[67] Creating associations between two otherwise unrelated norms should yield similar results.

C. Script change

Unfortunately, less research has been conducted on how to change a script as compared to how to change a schema. However, as a script is, by definition, a type of schema, the lessons learned from the literature on schema change should generally apply to script change.

In one experimental study on script adherence, participants drew cartoons of a character either engaging or not engaging in a series of scripts.[68] For example, in a "blood donation" script, subjects drew characters who either ended up donating blood or refusing to donate blood. Depending on the condition, subjects were instructed to treat the main character as themselves, a close friend, or a disliked acquaintance, and they drew each script one, two, or three different times, with different versions of the cartoon each time. Before and after drawing the cartoons, the subjects rated how likely they thought they were to engage in each script if given the opportunity.

The more times subjects were instructed to draw themselves following the blood donation script, the more likely they were to predict themselves engaging in it. The opposite was true for subjects who were instructed to draw themselves rejecting the script. Drawing a friend or a disliked acquaintance engaging or not engaging in a script had no impact on subjects' intentions. Interestingly, the impact of drawing oneself engaging (or not engaging) in a script remained unchanged three days later, indicating that the manipulation *sustainably* influenced subjects' perceived likelihood of following the script. People did not forget the alternate reality once they had learned of it.

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[67] Cialdini et al., "A Focus Theory of Normative Conduct."
[68] Craig Anderson, "Imagination and Expectation: The Effect of Imagining Behavioral Scripts on Personal Influences," *Journal of Personality and Social Psychology* 45, no. 2 (1983): 293–305.

V. Script and Schema Change and the Efficacy of Past Norm Interventions

There have been many attempts to curb or change maladaptive collective practices, especially those linked to social norms. Too many of these attempts have been unsuccessful.[69] Changing the grammar of a society is not so easy. Nevertheless, there are several interventions that have been successful in changing norms. We will discuss the success (or lack thereof) of these interventions in light of the model of norms being embedded into scripts and triggered by schemata.

Before starting such a discussion, however, it is important to acknowledge that the type of interventions that we will discuss involve much more than schema or script change, and reports of such interventions have not been very clear in operationalizing relevant concepts. Certainly, other factors could be at work in changing behavior, and we cannot definitively know the role of scripts and schemata in these settings without further measurements and more control. Moreover, script and schema change is likely just one important part of the behavior change puzzle. In many, if not most cases, many other surrounding factors must be taken into consideration.

In order to truly determine that schema and script change may change or create a norm in a field setting, randomly controlled trials must be both tightly controlled and specifically designed to identify the role of script and schema change. For example, in such a trial, one could look at two meaningfully similar communities, and use one as a control. In both communities, surveys can determine commonly held scripts and schemata and isolate elements within them that seem to play a role in maintaining a behavior. In one such community, one could introduce a message to induce change in a specific aspect of their scripts or schemata, such as by linking the idea of defecating in the open to notions of collective pollution. After determining that such a message was successful in changing the desired aspects of a script or schema, one may later observe whether open defecation lessens in the target community in comparison to the untargeted community. In such a controlled setting and by grounding the proposed relationships among scripts, schemata, and norms in specific situations, one can see whether the change in a specific aspect of scripts or schemata has the predicted downstream effect on norms and behavior. That being said, we will apply the proposed relationship to existing interventions in an attempt to explain their success.

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[69] Deepak Sanan and Soma Ghosh Moulik, "Community-Led Total Sanitation in Rural Areas: An Approach that Works," (Washington, DC: Water and Sanitation Program, 2007); Nahid F. Toubia and E. H. Sharief, "Female Genital Mutilation: Have We Made Progress?" *International Journal of Gynecology and Obstetrics* 82, no. 3 (2003): 251–61.

A. Abandonment of female genital cutting: The Saleema initiative.

In Sudan and many surrounding countries, female genital cutting (FGC)[70] appears to be a dominant social norm in many communities. Women who undergo FGC tend to suffer from numerous health problems throughout their lives and during childbirth, and many consider the practice to be a human rights violation.[71] In 1990, FGC rates in young girls were as high as 92 percent in Sudan, and by 2006, these rates had only dropped to 89 percent, despite attempts to end the practice.[72]

In Sudan, an uncut woman is commonly termed "ghalfa," a pejorative word that carries connotations of prostitution, promiscuity, and impurity.[73] Even if parents are aware of the negative health consequences of FGC, they often continue to cut their daughters in order to protect them from the negative social consequences of "being ghalfa." The Saleema campaign was designed in large part to rebrand women who have not undergone FGC as "Saleema," an Arabic name meaning "whole, intact, healthy in body and mind, unharmed, pristine, untouched, in a God-given condition, [and] perfect."[74] The campaign's primary tactic was to encourage FGC abandonment by rebranding uncut women in a positive, socially acceptable light.

Prior to the Saleema campaign, there was no alternative term for an uncut woman. In other words, the "ghalfa" schema was the only one through which one could process an uncut woman. As mentioned earlier, even if one is aware of the flaws present in an existing schema, an insufficient schematic understanding is functionally superior to no schematic understanding at all. Instead of taking on the difficult task of completely reversing the deeply pejorative "ghalfa" schema, the designers of the Saleema campaign decided to orient the Sudanese people toward the novel and positive "Saleema" schema. This tactic required no change to the "ghalfa" schema at all—only the creation of an alternative one. Importantly, it also did not change the surrounding values of purity and honor but only shifted what behaviors people thought best fulfilled such values.

The initiative featured both educational elements that informed people of the nature of being "Saleema" (which serve to create the novel "Saleema" schema) and elements that spread the belief that many people endorsed the Saleema perspective (which help combat pluralistic ignorance).[75] The initiative was public in nature and was broadcasted via radio, television, and poster advertisements. The media discussed the many benefits of being

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[70] Also known as female genital mutilation (FGM).

[71] E.g., Frances Althaus, "Female Circumcision: Rite of Passage or Violation of Rights?" *International Family Planning Perspectives* (1997): 130–33.

[72] Kristin Helmore. "In Sudan: Changing Labels, Changing Lives" (2012). Retrieved from United Nations website: https://www.unfpa.org/public/home/news/pid/11223

[73] Toubia and Sharief, "Female Genital Mutilation: Have We Made Progress?"

[74] Helmore, "In Sudan: Changing Labels, Changing Lives," para. 4.

[75] Helmore, "In Sudan: Changing Labels, Changing Lives."

Saleema and how change is a good thing, thereby promoting Saleema without directly damning or discrediting what many consider a venerable tradition.

Many Sudanese public figures and celebrities have come out in support of the campaign, helping to establish its legitimacy, and men and women were encouraged to wear clothing of specific, bright colors as a sort of uniform to publically signal their support for the Saleema perspective. In public maternity hospitals and health centers, Sudanese women are told about the benefits of being "Saleema" and are invited to join in the campaign. Those who join agree to not cut their daughters and sign a pledge of their support that is prominently displayed at the hospital. All these clear signals of collective support serve to inform the unconvinced about a shift in perspective that is taking place.

Without these outward signals of support, it would be possible that Sudanese people privately embrace the Saleema perspective, but outwardly say nothing out of the fear that their fellow citizens retain the traditional understanding of FGC. FGC is typically a taboo topic to bring up in casual conversation,[76] so without the overt signals of collective support, people may never adjust their empirical and normative expectations of how their peers feel about FGC. These repeated, salient displays of support for the Saleema perspective all serve to defy the traditional conceptualization of "a Sudanese person" (the relevant reference group) as someone who endorses FGC. Changing a population's attitudes toward a practice is a good first step, but if such a population's behavior is contingent upon what they expect their peers think one does and should do, then changes in personal perspective will not be sufficient to change behavior.

These signals shift the target population's conceptualization of the average Sudanese person and, by extension, what they expect from the average Sudanese person. This change would likely best be modeled by the bookkeeping model of schema change. Every time one hears a publicized endorsement of the campaign, every time one sees someone wearing the Saleema clothing, and every time one sees a pledge of support or hears someone talking about the Saleema perspective positively, the old conceptualization of a Sudanese person who endorses FGC is challenged. These are not a handful of highly discrepant instances (which would imply the conversion model), but a multitude of mild to moderately discrepant instances. Recall that the more prototypical a schema-defiant piece of information is, the more difficult it will be to explain the discrepant information as an "exception."[77]

The Saleema campaign appears to have been fairly successful so far: as of 2012, approximately 1000 communities were introduced to the campaign

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[76] Alice Behrendt, "Female Genital Cutting in Moyamba and Bombali Districts of Sierra Leone: Perceptions, Attitudes and Practice" (Dakar, Senegal: Plan International, 2005).

[77] Johnston and Hewstone, "Subtyping and Perceived Typicality."

and 640 communities had signed a document pledging to boycott FGC.[78] At the time of the evaluation there was not enough data to see whether this mapped on to a change in behavior, but a subsequent analysis showed a marked shift in attitudes and behavioral intentions, with over 85 percent of respondents from a large country-wide sample indicating that they both did not intend to cut their daughters and would encourage those they knew to likewise refrain.[79] Even if only those who were more predisposed to abandoning FGC were convinced, in a country with such high initial rates of FGC, 64 percent of targeted communities pledging is substantial progress. In West Kordofan (a province of central Sudan), the local commissioner even petitioned the authorities to change the name of the village to "Saleema."[80] If anything, this is an indicator of just how positive a signal the novel "Saleema" schema is sending to those who adopt it.

B. Ineffective FGC interventions

While the Saleema initiative has found some success in reducing adherence to the FGC norm, many other attempts have been unsuccessful. One of the most common methods of attempting to reduce FGC rates is to simply inform a target population about the negative health consequences that stem from FGC and hope that they respond accordingly.[81] Such methods have merely caused target populations to hire trained health professionals to perform the cutting operation (which has led to safer surgeries) rather than actually abandon the practice. Indeed, survey data reveal that 97 percent of Egyptian girls and women have still undergone the surgery, despite twenty to thirty years of health information-based interventions.[82] While informing people about physical risks of a maladaptive practice is important, it is insufficient—such methodology ignores the social pressures that drive people to engage in it. Even if one were to reframe FGC as a dangerous practice, it is still linked to many positive elements, such as purity and virginity, that are so socially important that they overwhelm any health related considerations in the decision-making process. We want to stress that when practices are interdependent (that is, when one's choices depend on what other people do or approve of, as those that are or are supported by social norms), it is necessary to target the entire network of norm-followers. In this sense, successful interventions are effective precisely because they target people's collectively held *social* schemata or scripts (thus changing social expectations).

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[78] Joint evaluation of the UNFPA-UNICEF Joint Programme on Female Genital Mutilation / Cutting (FGM/C): Accelerating Change (2008–2012).

[79] W. Douglas Evans, "Saleema Evaluation Annual Report Year 1 (Phases 1-2)" submitted to UNICEF Sudan (2016).

[80] Helmore, "In Sudan: Changing Labels, Changing Lives."

[81] Toubia and Sharief, "Female Genital Mutilation: Have We Made Progress?"

[82] Ibid.

Legal interventions on their own have similar limitations in that they ignore the important cognitive underpinnings of certain practices. Legal norms that act contrary to social norms typically result in little behavioral change.[83] In the same way that bribery persists in countries where it is explicitly illegal, FGC persists in countries where practicing it has been made illegal and carries the risk of heavy penalties.[84] Even if one is aware that cutting risks incurring a monetary fine, such sanctions are difficult to enforce, and following the law would mean that one's daughter could be devalued by her community, and she would have a more difficult time finding a husband.

C. Combating open defecation with Community Approaches to Total Sanitation

Other effective social norm interventions are the Community Approaches to Total Sanitation (CATS) and specifically the Community-Led Total Sanitation (CLTS) program, which together are designed to combat open defecation or OD.[85] OD is practiced by 1.2 billion people in the world and is the cause of many severe health issues, including diarrhea, acute respiratory infections, and other diseases via the contamination of ground water and agricultural products.[86] The CLTS approach appears to effectively motivate people to abandon OD by changing existing schemata and prompting the development of novel scripted behavior.

In many societies, feces are not always associated with disease, and OD is not always looked upon in a negative light.[87] CLTS is designed in such a manner to encourage community members to develop these associations and do so on their own.[88] People have a harder time discounting their own reasoning and conclusions than the arguments of a stranger, and so this design is sensible. Additionally, the first thing an intervention leader does when implementing the CLTS is establish a sense of trust and rapport with the target community to encourage them to take his or her messages seriously.[89]

[83] Bicchieri and Mercier, "Norms and Beliefs: How Change Occurs"; Dan Kahan, "Gentle Nudges versus Hard Shoves: Solving the Sticky Norms Problem," *University of Chicago Law Review* (2000): 607–45.

[84] Toubia and Sharief. "Female Genital Mutilation: Have We Made Progress?"

[85] Colleen Galbraith and Ann Thomas, "Community Approaches to Total Sanitation: Based on Case Studies from India, Nepal, Sierra Leone, Zambia," in *Field Notes of UNICEF's Division of Policy and Practice* (New York: UNICEF, 2009); Kamal Kar and Robert Chambers, "Handbook on Community-Led Total Sanitation," (London: Plan UK, 2008).

[86] Galbraith and Thomas, "Community Approaches to Total Sanitation."

[87] Nilanjana Mukherjee, Amin Robiarto, Efentrif Saputra, and D. Joko Wartonio, "Achieving and Sustaining Open Defecation-Free Communities: Learning from East Java," *Report from WSP* (Washington, DC: World Bank 2012); Wateraid, *Comparison and Adaptation of Social Change Dynamics for the Collective Abandonment of Open Defecation* (2008). Retrieved from Wateraid International website: http://www.wateraid.org/~/media/Publications/open-defecation-social-change-dynamics-ghana-study.pdf

[88] Kamal Kar and Robert Chambers, "Handbook on Community-Led Total Sanitation."

[89] Galbraith and Thomas, "Community Approaches to Total Sanitation"; Kamal Kar and Robert Chambers, "Handbook on Community-Led Total Sanitation."

Once a rapport has been established, then what is known as the "triggering process" begins, in which the community is exposed to problems associated with OD.[90] For example, in the "transect walk" the intervention leader escorts the entire community through OD fields and has them analyze the fields in detail.[91] These walks are implemented so as to make everyone feel as much collective embarrassment and disgust as possible and to attribute it to OD.

In addition to the transect walk, CLTS intervention leaders teach how OD can lead to disease by visually simulating the disease transmission process.[92] For example, a facilitator can put food down next to a pile of feces and wait for flies to start travelling between each pile. When asked to eat the food, community members inevitably refuse to do so, pointing out how the travelling flies are infecting the food with fecal matter. Through realizations like this one, community members independently form the link between OD and eating one's own (and one's neighbors') excrement. Many similar connections can be made in the CLTS between OD and disease transmission.

Once the triggering processes are complete people are encouraged to discuss how to go about stopping OD.[93] By discussing what is often a taboo subject in these collective forums, people will not have to fear the kind of social whiplash that they might otherwise experience if they were to broach the topic on their own.[94] People in many such communities are very hesitant to talk about defecation, and CLTS facilitators use a range of tactics (such as jokes and songs) to make people more comfortable talking about it. Without these tactics, even if someone were to independently identify OD's problems, he might never bring it to public attention as such topics are unfit for public discourse.

The kind of schema change that is being induced by the CLTS would likely best be captured by the conversion model of schema change. The handful of triggering processes collectively serve as a small collection of highly salient, schema-discrepant observations. Each example is so explicit and intense that only a few of them are necessary to induce schema revision.

Each triggering process is designed to link "open defecation" with negative nodes (such as disgust, disease, and shame) in its semantic network.[95] Additionally, the CLTS does not induce the association of these elements with the potential script[96] of "latrine usage," thereby elevating it above

[90] Kamal Kar and Robert Chambers, "Handbook on Community-Led Total Sanitation."

[91] Ibid, 27.

[92] Ibid.

[93] Ibid.

[94] Petra Bongartz, Samuel Musembi Musyoki, Angela Milligan, and Holly Ashley, "Tales of Shit: Community-Led Total Sanitation in Africa–An Overview," *Participatory Learning and Action* 61, no. 1 (2010): 27–50.

[95] Kamal Kar and Robert Chambers, "Handbook on Community-Led Total Sanitation."

[96] We say "script" here as we are specifically referring to private defecation as an event. Open defecation is also a loose script, without having highly ordered action elements. However, as we are more interested in open defecation as a general concept, we have referred to it as a schema—technically either term is applicable.

"open defecation" by comparison. In such communities, prior to any CLTS campaign, the scripts of "latrine usage" and "open defecation" were largely equivalent. The change that "open defecation" experiences throughout the intervention process serves to disassociate it from "latrine usage."

The fact that all community members experience the triggering processes collectively serves to evenly distribute the blame of OD. People are made to feel that OD is both everyone's fault and everyone's problem, and issues of pluralistic ignorance are avoided. Not only will everyone associate OD with disgust and disease, but it will be apparent that one's peers are developing the same associations. All of this script and schema change eventually leads to a change and creation of normative and empirical expectations, and, by extension, the creation of a social norm of latrine use.[97]

Not only is the CLTS appealing from a theoretical point of view, but it is also very effective. For example, in 2005, it was estimated that 2000 communities in Bangladesh were 100 percent open defecation-free as a result of CLTS interventions.[98] However, such an estimate does not tell the full story because the total number of targeted villages is not well documented. Fortunately, more scientific evaluations of the program have emerged: for example, a randomized control trial found that, in comparison to untargeted villages, villages targeted by CLTS nearly doubled their rates of latrine ownership and experienced a 70 percent reduction in adult self-reported open defecation, in addition to a variety of positive health outcomes such as reduced stunting and rates of child diarrhea.[99] In Indonesia, the Ministry of Health found the CLTS to be so successful that they changed ongoing sanitation projects mid-stream and made the CLTS the primary tactic for improving rural sanitation.[100] CLTS interventions in Zambia have also met success—between 2007 and 2008, sanitation increased from 38 percent to 93 percent in the 517 villages that were targeted, 402 of which have been declared 100 percent open defecation-free.[101]

D. Simple latrine construction: an ineffective open defecation intervention

Despite the apparent success of the CLTS model, it is important to keep in mind that established customs are hard to change. Defecating in the

[97] Cristina Bicchieri, *Norms in the Wild: How to Diagnose, Measure, and Change Social Norms* (New York: Oxford University Press, 2016).

[98] Kamal Kar and Katherine Pasteur, "Subsidy or Self-Respect? Community-Led Total Sanitation; An Update on Recent Developments," *Institute of Development Studies* (2005).

[99] Amy J. Pickering, Habiba Djebbari, Carolina Lopez, Massa Coulibaly, and Maria Laura Alzua, "Effect of a Community-Led Sanitation Intervention on Child Diarrhoea and Child Growth in Rural Mali: A Cluster-Randomised Controlled Trial," *Lancet Global Health* 3, no. 11 (2015): e701–e711.

[100] Nilaniana Mukherjee, A. Robiarto, E. Saputra, and D. Wartono, "Achieving and Sustaining Open Defecation Free Communities: Learning From East Java," Report from WSP, (Washington, DC: World Bank, 2012).

[101] Colleen Galbraith and Ann Thomas, "Community Approaches to Total Sanitation: Based on case studies from India, Nepal, Sierra Leone, Zambia," in *Field notes of UNICEF's Division of Policy and Practice* (New York: UNICEF, 2009).

open is simply more convenient than defecating in private—it can be done any time and does not require the construction of a latrine. In order to be willing to change their behavior, people must develop a preference for latrine use.

Traditionally, many organizations and governments have attempted to curb OD by simply subsidizing community latrine construction.[102] These attempts have been widely unsuccessful, with the toilets eventually being abandoned or used for storage. For example, in the case of the Central Rural Sanitation Program in India, although over 134 million dollars was spent and over nine million latrines were constructed, rural sanitation only improved by an annual rate of 1 percent.[103] In fact, survey data gathered across several states in India found that 40 percent of households with a working latrine had at least one member who still defecated in the open.[104] Without the preference for latrine use, people will not be motivated to use them (despite their availability). Other interventions have focused on teaching individual households about the dangers of OD.[105] These attempts have also not been as successful, as even if some households are convinced that OD is detrimental to their health (and thus should stop engaging in it), not all households will necessarily be reached or convinced.[106] Additionally, learning about the health benefits of latrines is not as motivating as learning about such benefits in conjunction with external social pressure. We have stressed how a major change to customary scripts and schemata relevant to OD is an important element of effective change. It should be noted that such changes aim to induce the creation of normative and empirical expectations that are the hallmark of a new social norm of latrine use.[107]

E. Litterbugs, tossers, and chauvinist pigs

The introduction of novel linguistic terms is a common way to motivate compliance with emerging and shifting norms. With the resurgence of the feminist movement in the 1960s and 1970s, activist women coined the term "male chauvinist" (which eventually evolved into "male chauvinist pig") to "derogate the conviction of men that they were better than women."[108]

[102] Deepak Sanan and Soma Ghosh Moulik, "Community-Led Total Sanitation in Rural Areas: An Approach that Works" (2007).

[103] Santosh Kumar and Sebastian Vollmer, "Does Access to Improved Sanitation Reduce Childhood Diarrhea in Rural India?" *Health Economics* 22, no. 4 (2013): 410–27.

[104] Diane Coffee, Aashish Gupta, Payal Hathi, Nidhi Khurana, Dean Spears, Nikhil Srivastav, and Sangita Vyas, "Revealed Preference for Open Defecation," *Economic and Political Weekly* 49, no. 38 (2014): 43–55

[105] Ibid.

[106] Complete abandonment is needed for any meaningful health improvements to take place.

[107] Bicchieri, *Norms in the Wild*.

[108] Jane Mansbridge and Katherine Flaster, "Male Chauvinist, Feminist, Sexist, and Sexual Harassment: Different Trajectories in Feminist Linguistic Innovation," *American Speech* 80, no. 3 (2005): 261.

The phrase soared in popularity, and soon many women reported using the term as a form of everyday activism to combat male discrimination.

The introduction of "male chauvinism" and "chauvinist pig" was intended to demonize what was originally seen as benign discriminatory behavior. These terms achieved the opposite of the Saleema campaign: they provided a novel schematic lens through which to process existing people and behaviors, but this time in a negative light. Their application sent clear normative signals that sexism was not acceptable, likely changing men's normative expectations about what was acceptable (particularly for the feminist reference group, who would be more likely to use the terms).[109] Indeed, in phone interviews, many women who had used the terms to describe acquaintances reported that it really had "made the men think and sometimes change."[110]

New linguistic terms have also been systematically used to encourage many other prosocial behaviors, such as not littering. For example, in 2002, Australia's Department of Environment and Conservation targeted roadside littering by introducing the "Don't be a Tosser" campaign, in which advertisements on television, the radio, taxis, and billboards all blasted the slogan.[111] Tying the negative label of "tosser" to someone who litters served to make the act more of a transgression. It appeared to have worked. After the campaign, the term "tosser" was commonly used to describe litterers (indicating that it had become a shared concept), and many people reported community members calling litterers "tossers" to their face, suggesting the term was being employed as an informal social sanctioning device. Importantly, the campaign was effective. Nearly twice as many people (81 percent up from 44 percent) reported not throwing trash from their cars, and the number of people who felt that vehicular littering was not relevant to them decreased from 51 percent to 15 percent. A similar campaign was replicated in London in 2003, after which the city experienced an estimated 39 percent improvement in road cleanliness.[112]

These are all examples of new ways of perceiving and judging existing behaviors that became increasingly common. In this respect, the schema of "good man" (or a "litterer") was ostensibly changed. The new schema involved different normative expectations and even the introduction of new sanctions for newly transgressive behaviors. In this respect, one could claim that a new norm was created as part of newly emerging scripts and schemata. We see this change as an example of the bookkeeping model of schematic change: the terminology was introduced and used continuously, spreading to more and more individuals so as to become a household term.

[109] Ibid.

[110] Ibid, 263.

[111] Department of Environment and Conservation (DEC), Sustainability Programs Division, "Don't Be a Tosser: Litter Prevention Campaign 2002" (2005). Retrieved: http://www.environment.nsw.gov.au/resources/warr/2005034_ed_dontbeatosser_cs.pdf

[112] Fiona Campbell, *People Who Litter* (Wigan, UK: ENCAMS, 2007).

F. *Soap operas: a catalyst of social change*

Soap operas, what may strike many as a banal pastime, have been credited with the induction of a considerable range of behavioral and attitudinal change.[113] These shows present viewers with characters who are easy to identify with yet frequently deviate from maladaptive behavioral patterns. In many respects, the characters that viewers observe when watching certain soap operas are the perfect instances of schema-discrepant information.[114] They are largely prototypical to a particular social group, yet they often deviate in specific, unambiguous, and positive ways. Here, we will present and review both theoretical considerations and empirical evidence to show that soap operas can induce schema, script, and ultimately, social norm change in a variety of contexts.

Between 1960 and 2000, Brazil's total fertility rate dropped from 6.3 percent to 2.3 percent.[115] La Ferrara and colleagues[116] argue that this drop in fertility is largely due to a combination of increased television ownership (from 8 percent to 81 percent between 1970 and 1991) and increased soap opera broadcasting levels. Telenovelas, which are currently watched by between 60 and 80 million Brazilians of a range of socioeconomic classes, were (until quite recently) exclusively broadcasted by the Rede Globo corporation. They were made available to watch on a region-by-region basis as Rede Globo coverage expanded. As their plots typically involve five or so families, the number of children each family has is unrepresentatively low in order to keep the number of characters manageable.

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[113] Brown, "Prosocial Effects of Entertainment Television in India"; William Brown, "Socio-cultural Influences of Prodevelopment Soap Operas in the Third World," *Journal of Popular Film and Television* 19, no. 4 (1992): 157–64; Robert Jensen and Emily Oster, "The Power of TV: Cable Television and Women's Status in India," *The Quarterly Journal of Economics* 124, no. 3 (2009): 1057–94; Eliana La Ferrara, Alberto Chong, and Suzanne Duryea, "Soap Operas and Fertility: Evidence from Brazil," *American Economic Journal: Applied Economics* 4, no. 4 (2012): 1–31; Elizabeth Levy Paluck. "What's in a Norm? Sources and Processes of Norm Change," *Journal of Personality and Social Psychology* 96, no. 3 (2009): 594–600; Elizabeth Levy Paluck, "Reducing Intergroup Prejudice and Conflict Using the Media: A Field Experiment in Rwanda," *Journal of Personality and Social Psychology* 96, no. 3 (2009): 574–87; Everett Rogers, Peter W. Vaughan, Ramadhan M. A. Swalehe, Nagesh Rao, Peer Svenkerud; Suruchi Sood, "Effects of an Entertainment-Education Radio Soap Opera on Family Planning Behavior in Tanzania," *Studies in Family Planning* 30, no. 3 (1999): 193–211; Matthew Trujillo and Elizabeth Levy Paluck, "The Devil Knows Best: Experimental Effects of a Televised Soap Opera on Latino Attitudes Toward Government and Support for the 2010 US Census," *Analyses of Social Issues and Public Policy* 12, no. 1 (2012): 113–32.

[114] According to the narrative transportation theory, even though such characters and stories are obviously fictional, they can still feel real enough to the viewer to be persuasive. See: Melanie Green and Timothy C. Brock, "The Role of Transportation in the Persuasiveness of Public Narratives," *Journal of Personality and Social Psychology* 79, no. 5 (2000): 701.

[115] David Lam and Letícia Marteleto, "Small Families and Large Cohorts: The Impact of the Demographic Transition on Schooling in Brazil," *The Changing Transitions to Adulthood in Developing Countries: Selected Studies* (2005): 56–83.

[116] La Ferrara et al., "Soap Operas and Fertility: Evidence from Brazil."

The advent of Rede Globo coverage in an area was followed by significant drops in fertility rates.[117] Additionally, the more time that had passed since Rede Globo started covering an area, the lower the birth rates tended to be. These effects were stronger for women of the same age as the telenovela protagonists (mostly women in the mid to late stages of their childbearing life) and from lower socioeconomic classes (for whom literacy rates are lower and television is one of the few accessible mediums of information transmission other than interpersonal communication).

This reduction in birth rates is not just due to television exposure, but to specific exposure to the reality portrayed in Rede Globo's telenovelas.[118] Specifically, if a family gave birth to a child in an area covered by Rede Globo, there was a 33 percent chance they would name him or her after one of the main novela characters, but if they lived outside such an area there was only an 8 percent chance. Additionally, increased coverage of other stations had no impact on birth rates.

These shows stress not only feature female protagonists with few children, but they tend to stress values including freedom, personal wealth, and female empowerment in the work world, among others.[119] They were presented in the form of an alternative lifestyle that featured few children and plenty of disposable income, thereby perhaps creating a "greater sensitivity to the opportunity costs of raising children."[120]

Not only do these telenovelas project prosocial messages and values, but audience members find the soaps' characters easy to identify with.[121] Brazilian telenovelas involve personally relevant and highly relatable everyday experiences, and this is true of many soap operas in developing countries.[122] In other words, the characters on the telenovelas appear to be largely prototypical of the particular segments of their viewer base that they portray. That is, they conform to familiar schematic expectations enough to be relatable, yet they deviate enough in positive and unambiguous ways to change schematic expectations.

Assuming the soap opera characters are indeed largely prototypical with several notable exceptions (which appears to be the case), then they would likely induce schematic adjustment in the social groups with which they are associated rather than being subtyped and understood as "an exception to the rule." Recall that schema-defiant instances that are largely prototypical are harder to subtype. As there are many different telenovelas that people can watch that all feature the same relevant

[117] Ibid.
[118] Ibid.
[119] Ibid.
[120] Ibid., 9.
[121] Brown, "Sociocultural Influence of Predevelopment Soap Operas"; Thomas Tufte, "Soap Operas and Sense-Making: Mediations and Audience Ethnography," *Entertainment–Education and Social Change: History, Research, and Practice* (2004): 399–415.
[122] Brown, "Sociocultural Influence of Predevelopment Soap Operas."

qualities (relatable characters that deviate from expectations in similar positive ways) and these schema-defiant qualities are repeatedly observed each time one watches an episode, we contend that the type of schema change that is likely occurring would be best modeled by the bookkeeping model of schema change.

Recall that women in the later stages of their reproductive life were the ones who experienced the most pronounced drop in birth rates.[123] We suspect that this disparity in birth rate change is due precisely to the fact that women who were and are featured on the telenovelas (who have few children) match this older age profile. Women of all ages who watch these shows likely update their schematic understanding of the type of woman featured in the shows, but such a schematic readjustment is not as relevant to the younger women. Indeed, women between the ages of fifteen and twenty-four actually exhibited no significant change in birth rates between 1970 and 1991.

For the relatively older women, the alternate life path of having a career and fewer children would seem much more reasonable and appealing once they update their schematic understanding of the group with which they identify. Prior to this revision, if their schema for women like themselves exclusively featured a large family and no substantial career, then choosing to have a smaller family would defy those "legitimate" expectations. One might worry that engaging in such a lifestyle and choosing a career over a large family would be seen as deviant and incur a negative judgment from one's peers. Telenovela viewership both legitimizes and even idealizes such an alternative lifestyle for that older age group.

Beyond the incidental fertility changes observed in Brazil, other soap operas were explicitly designed to induce social change.[124] For example, a study on Latin American attitudes towards the U.S. census experimentally demonstrates similar findings by showing that a well-liked character's behavior in a soap opera (*Más Sabe El Diablo* or *The Devil Knows Best*) could influence both the audience's attitudes and behavior.[125] Similarly, *Hum Log* (*We People*), a show that was developed in India to promote respect for women, acceptance of cultural diversity, and other values met with considerable success.[126] Increased viewership fostered increasingly strong links among positive social figures, positive life outcomes, and positive ideologies in viewers' semantic networks.

Analyzing longitudinal survey data in several regions of rural India demonstrated that the advent of cable television access was associated with lower female acceptance rates of spousal abuse, a diminished preference

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[123] La Ferrara et al., "Soap Operas and Fertility: Evidence from Brazil."

[124] Brown, "Sociocultural Influence of Predevelopment Soap Operas"; Tufte, "Soap Operas and Sense Making."

[125] Trujillo and Paluck, "Experimental Effects of a Televised Soap Opera."

[126] Brown, "Sociocultural Influence of Predevelopment Soap Operas"; Arvind Singhal and Everett Rogers, "The Hum Log Story" (1989).

for sons, greater levels of female autonomy, and lower fertility rates.[127] Similar to Brazilian telenovelas, Indian soap operas often feature both educated, urbanite families and liberated female characters who marry later and have fewer children. Indian audience members have been shown to identify with soap opera characters and incorporate their behavior into their own sense of self,[128] which likely lead to these positive social changes.

The elements of social change that this longitudinal data[129] explore are particularly relevant with respect to the changes in acceptance of domestic violence, which were assessed by asking female participants whether they thought that a husband is justified in beating his wife in a variety of situations. Most women answered that they felt it was justified in at least one situation (such as when "she does not cook food properly"[130]). Each instance in which they thought domestic violence was justified could be interpreted as both a violation of the "good wife" schema and a triggering cue for the "domestic violence" script. If after being exposed to cable television, women are decreasing the number of behaviors in which they believe domestic violence is an acceptable response, then one might speculate that either their "domestic violence" script is changing or their "good wife" schema is changing.

In support of a causal relationship between schema change and behavioral change, Rogers and colleagues[131] demonstrate with a quasi-experimental field study that exposure to a radio soap opera (*Twende na Wakati* or *Let's Go with the Times*) effectively promotes discussion about, positive attitudes toward, and use of family planning practices in Tanzania. We suspect that these changes were largely driven by the formation of new links between existing schemata. Many Tanzanians (46 percent) listen to the radio at least once a week but have limited exposure to other media, making the country a relatively controlled environment for a radio intervention.

In *Twende na Wakati*, unambiguously positive and negative role models are featured who respectively adopt or reject family planning practices and attitudes. For example, Mkwaju, a promiscuous, alcoholic, and chauvinistic truck driver has sex with many prostitutes, steals to support his many mistresses, and ultimately loses his job, wife, and even life after contracting HIV/AIDS.[132] Most listeners identified with the positive role

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[127] Jensen and Oster, "Cable Television and Women's Status in India."

[128] Kirk Johnson, "Media and Social Change: The Modernizing Influences of Television in Rural India," *Media, Culture and Society* 23, no. 2 (2001): 147–69; Timothy Scrase, "Television, the Middle Classes and the Transformation of Cultural Identities in West Bengal, India," *International Communication Gazette* 64, no. 4 (2002): 323–42.

[129] Jensen and Oster, "Cable Television and Women's Status in India."

[130] Ibid., 1068.

[131] Rogers et al., "Effects of an Entertainment-Education Radio Soap Opera."

[132] Ibid.; Michael Slater, "Entertainment Education and the Persuasive Impact of Narratives," in Melanie Green, Jeffrey J. Strange, and Timothy C. Brock, eds. *Narrative Impact: Social and Cognitive Foundations* (New York: Taylor and Francis, 2003), 157–81.

models but few identified with the negative role models. The longer listeners followed the show, the stronger their links between the sexually unsafe behaviors featured in the show and the negative life outcomes in their semantic networks became (for example, between "unprotected sex" and "venereal disease" or "death").

All the areas of Tanzania that Rogers and colleagues[133] tested were exposed to government-sponsored informational messages in support of family planning, but only treatment areas received coverage of *Twende na Wakati*. Most listeners in the treatment area felt positive toward the show and indicated that they learned about family planning, how to prevent HIV/AIDS, the dangers of alcohol abuse, and the importance of spousal communication from listening to it. More importantly, self-reported family planning adoption by married women increased by roughly 10 percent in the treatment areas, and such levels decreased by 11 percent in the control areas over the experimental period. Twenty-five percent of new family planning adopters at health clinics across the country indicated *Twende na Wakati* as their main reference in adopting family planning.

By specifically comparing those who listened to *Twende na Wakati* to those who did not within treatment areas, the differences become much more pronounced. Forty-nine percent of married women who actually listened to the show adopted family planning practices as compared to 19 percent for those who did not listen, and adoption rates of female listeners increased to 64 percent if they talked about the family planning content of the soap opera with their spouses.[134] High levels of communication with spouses and general others would make it easy to infer how relevant others feel about a particular matter, thereby facilitating a shift in normative expectations. Interestingly, exposure had no impact on awareness of family planning methods, which was already high at the beginning of the intervention. Here, we see how purely informational campaigns might not be enough to change important structural elements of family planning schemata. Instead, the availability of a long-term show that presented models of action and characters that easily fit into societal roles became crucial in changing the listeners' empirical expectations about the possibility and, indeed, advisability of adopting new practices. Not only were links between family planning and other elements of listeners' semantic network likely formed, but the public nature of these shows helped people realize that many others are listening and induced discussion among friends who follow the same program.

VI. Conclusion

We have reviewed many instances of how the proposed relationship and dynamics among scripts, schemata, and social norms can be used to

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[133] Rogers et al., "Effects of an Entertainment-Education Radio Soap Opera."
[134] Ibid.

explain the efficacy of a range of interventions. To create or abandon a norm, it would be necessary to induce a shared, collective change to the trigger cue, the script, or to provide shared alternative schemata or scripts to process the situation (in the case of schemata) or guide one's behavior (in the case of scripts). We have focused on the cognitive underpinnings of norm activation and change. Norm dynamics is a highly complex process that necessarily involves a change in social expectations (empirical and normative). These social expectations are fundamentally grounded in shared social schemata for relevant reference groups. Providing an adequate model of norm change cannot avoid the scripts and schemata story, but it must also address how norm change is first sparked, how social structure (that is, social networks) can support or impair change, and the nature of the mechanism that coordinates behavioral change.[135]

We have considered interventions aimed at changing collective practices. Any such intervention should be guided by a meaningful theory. A particularly important theoretical element is the rich web of scripts and schemata in which these practices are usually embedded. Taking steps to understand this web and its elements should constitute a critical first step when designing effective behavioral interventions. Existing interventions that have inadvertently tapped into this intuition have met with success. Just imagine how effective they could become if they were explicitly designed with script or schema change in mind.

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[135] Bicchieri, *Norms in the Wild*.