Inside ILSI: How Coca-Cola, Working through Its Scientific Nonprofit, Created a Global Science of Exercise for Obesity and Got It Embedded in Chinese Policy (1995–2015)

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Abstract

Context: Industry influence on health science and policy is a critical issue of our day. In 2015 the *New York Times* revealed that Coca-Cola paid scientists to form a Global Energy Balance Network promoting the notion that exercise, not dietary restraint, is the solution to the obesity epidemic—a claim few accept. This article examines the organizational dynamics and policy process behind Coke's efforts to sway obesity policy—globally and in China, a critical market—during 1995–2015.

Methods: In-depth, qualitative research during 2013–18 involved 10 weeks of fieldwork in Beijing, interviews with 25 leading experts, analysis of newsletters documenting all major obesity-related activities in China, interviews with 10 Euro-American experts, and extensive internet research on all major actors.

Findings: This article tells two intertwined stories (institutional dynamics, science making and policy making) at global and local-Chinese levels. Coke succeeded in redirecting China's obesity science and policy to emphasize physical activity. Key to its success was the industry-funded global nonprofit International Life Sciences Institute (ILSI). Beneath ILSI's public narrative of unbiased science and no policy advocacy lay a maze of hidden channels companies used to advance their interests. Working through those channels, Coca-Cola influenced China's science making and policy making during every phase in the policy process, from framing the issues to drafting official policy.

Conclusions: Though China is exceptional, ILSI promoted exercise globally, suggesting potentially significant impacts in other ILSI-branch countries.

Keywords obesity epidemic, Coca-Cola, ILSI, China, GEBN

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With the rise and global spread of the obesity epidemic, the soda industry has been drawn into the heated battles over giant corporations manipulating the science and policy of human health to protect profits and escape regulation (Freudenberg 2014; Michaels 2020). While much is known about the covert strategies used by the tobacco and pharmaceutical industries, in the last five years attention has turned to the food, and especially soda, industry. In 2015, the *New York Times* published an exposé revealing how Coca-Cola (a.k.a. Coke) was quietly paying leading exercise scientists to establish the Global Energy Balance Network (GEBN) to promote the notion that what matters for obesity is physical activity, not dietary restraint—a claim few experts accept (O'Connor 2015a). Coke moved quickly to contain the damage. It stopped supporting exercise science, dissolved the GEBN, retired its chief science and health officer, and created an online "transparency list" of grants made to American groups since 2010 (O'Connor 2015b; Kent 2015).

Clearly the company would like this shameful episode to be forgotten. But it should not be, for it opens a critical window on the corporate shaping of obesity science and policy on a global scale—a largely hidden and highly consequential dynamic that remains very partially understood.

Since 2015 a handful of public health researchers have used publicly available information to document the scale of the efforts and some strategies of key actors. This work sketches the outlines of a vast, multipronged campaign on the part of the soda industry to counter evidence linking soda to obesity by shifting the blame to inactivity (Nestle 2015, 2018). Emails obtained through FOIA requests show how senior Coke executives engaged in coordinated efforts to influence scientific evidence and used external organizations to overcome global scientific and regulatory challenges (Sacks et al. 2018; Steele et al. 2019). These are valuable pieces of the puzzle, yet the crucial political questions remain unanswered. How much influence did Coke exert on policies to combat obesity and other chronic diseases, in the US or elsewhere? There is anecdotal evidence of corporate lobbying affecting a few specific policy measures (Aaron and Seigel 2017; Nestle 2018), but there has been no systematic study of the imprint left on obesity policy more generally. Second, through what organization(s) did Coke (and other soda companies) seek to sway science and policy, and how did those organizations work to promote (and conceal) industry influence? Third, at what points in the policy process did Coke intervene, and what was the politics of those interventions? The complexity of these dynamics, sensitivity of the issues, and secrecy of big corporations call for new, mostly qualitative methods of investigation, and an open-ended approach to finding answers.

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In 2013, well before Coke's efforts had come to light, I launched a 6-year research project on corporate intervention in the science and policy of the global obesity epidemic. An anthropologist of policy (Greenhalgh 2008), I adopted a historical and micropolitical approach that involved five analytically distinct (though in practice overlapping) steps: (1) creating a basic timeline of the development of obesity science and policy; (2) identifying the main actors (governmental, nonprofit, corporate; organizations and individuals); (3) mapping out the structure and workings of the core institutions; and (4) following their science- and policymaking activities over time to discern the key points or phases in the policy process where corporate actors influenced the policy process; before finally (5) analyzing the policies adopted (both formal anti-obesity policies and public health interventions) to discover the extent and nature of corporate impact.

A key analytic move was to recognize science making as part of the policy-making process. Though not conventional in policy research, including science making in the policy process makes eminent sense. Policies on human health are virtually all made on scientific grounds, scientists are often at the policy table, and debates over scientific rationales are frequently part of the policy process (Jasanoff 1998). The field of science and technology studies (STS) offers robust theoretical and methodological tools to guide this analysis. STS sees science not as an objective, value-free pursuit of the truth, but as a political process rife with contests over data, methods, rationales, and findings (Latour 1988). Viewing science as a fully human enterprise, it studies the social and institutional practices by which science is made, advanced, and translated into public policy. The small body of STS research on the post-1970s rise of commercialized science has stressed the extraordinary difficulty of uncovering corporate influence in a context in which researchers, charged with meeting market imperatives while ensuring their products appear value-free, respond by deliberately concealing the mechanisms of company intervention (Sismondo 2018; see also Michaels 2020). The task of studying industry influence, already challenging, is made more so by the need to peel back layers of obfuscation created by the actors involved.

Since the late 1990s, when soda consumption was linked to childhood obesity and US sales of sugary drinks began to plummet (Jacobson 1998; Ludwig, Peterson, and Gortmaker 2001), the soda giants have been actively targeting large, middle-income countries in the Global South, which offer not only growing markets but often more hospitable political climates (Taylor and Jacobson 2016). If the soft-drink companies are intervening to foster industry-friendly science and policy, one would expect them to be

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directing substantial efforts there. My research sought to illuminate the role of the food (especially soda) industry in the making of obesity science and policy in China. Like countries everywhere, China has experienced a Westernization of diets, sharp declines in activity, and a rapid rise in overweight and obesity, whose prevalence among adults more than doubled between the mid-1990s and mid-2010s (Zhou et al. 2015). China was not just my area of expertise, it was a major target for the soda industry, especially Coca-Cola, whose mid-2010s investment of $4 billion reflected its upbeat assessment of the long-term growth prospects in the China market (Coca-Cola Company 2016). China was especially attractive to industry because its leaders had staked the country's post-Mao success on a strategy of rapid, capitalist-style development in which foreign firms, with their enormous wealth and technical know-how, were (most of the time) welcome partners. China's pro-Western, pro-business political culture encouraged market approaches to everything, including science itself.

Given the absence of even basic information, it was necessary to work inductively and try to construct an account of the history of China's obesity science and policy methodically, starting with developments in China, then widening the angle of vision to include corporate and other global institutions trying to influence China's approach. Within a few weeks of beginning fieldwork in Beijing, I learned of the existence of the industry-funded scientific nonprofit, the International Life Sciences Institute (ILSI), which had a very low profile at the time, and discovered that its China branch (ILSI-China) was the lead organization working on obesity in the country, more influential even than the MOH. This confounding organization—which claimed to create neutral science despite being industry funded—would turn out to be the predominant vehicle through which Coke influenced obesity science and policy around the world.

Corporations are notoriously secretive, but so too, I discovered, are nonprofits like ILSI that are funded by rich and powerful companies. To the public, ILSI presented itself as a fully IRS-compliant nonprofit (501[c][3]) that created science for public benefit and did not engage in policy advocacy. When I began probing its informal operating arrangements, however, I discovered a host of private channels of corporate influence that were invisible to the untrained eye. To understand how ILSI operated, how member companies worked through it, and where in the policy process they were able to intervene, it was necessary to follow the organization in action as it created obesity science and policy, and take an open-ended approach to data collection. By triangulating data from multiple sources, I was able to create detailed accounts—of how ILSI worked, and how Coke worked

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through it to shape China's approach to obesity—that allowed me to answer the core political questions posed above. Because the GEBN represented the apex of Coke's and ILSI's efforts to sway thinking and policy on obesity, globally and in China, those accounts include the long history and so far unrecognized effects of the GEBN.

Two recent publications document Coke and ILSI's success in getting the exercise-first approach embedded in China's obesity science and policies (Greenhalgh 2019a, 2019b). This two-part article explains that success during the two decades from 1995, when ILSI took up the obesity issue, to 2015, when Coke abandoned its exercise-first approach. This task calls for a narrative mode of explanation, and so I convey my findings in the form of historically ordered accounts. I tell two separate but intertwined stories, each comprising one part of the article. The first is an institutional story of how ILSI works, at global and local levels, to advance corporate interests. This story highlights the gap between the public narrative about ILSI as a public-service organization that fully adheres to IRS rules on nonprofits, and a set of well-hidden private arrangements that operated for the benefit of private firms. Through a close study of ILSI's formal and informal practices, I uncover 12 channels of corporate influence operating at three levels of the organization. The second is a story of science making and policy making, again at two levels. At the global level, it traces how Coca-Cola quietly used the ILSI apparatus to advance the physical-activity response to obesity. It reveals how in 1999 physical activity became the preferred remedy, despite the limited evidence for its efficacy, and then how that remedy was advanced by a series of ILSI entities, culminating in the ill-fated GEBN. At the local-Chinese level, it shows how during 2004–15 Coke, working through ILSI-Global and ILSI-China, succeeded in redirecting China's obesity science and policy to emphasize activity over dietary restraint, an emphasis that persists today. By mapping ILSI's informal channels of corporate influence onto this historical process of science making and policy making, I lay bare how Coke, operating through ILSI, managed to leave its mark on every phase of the policy process, from the framing of the solution and naming of policy actors, to the incorporation of industry-friendly scientific rationales and public-health programs into China's official policies to combat obesity.

The analysis presented here builds on my earlier work on ILSI in China (Greenhalgh 2016, 2019a, 2019b). This article draws on new research to tell the story of ILSI-Global. In the two sections on ILSI-China (its workings and science/policy making), I make substantial use of material presented in the earlier essays, weaving the details into a new overarching

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argument about the nature of ILSI-Global and using them to show how what happened in this important country was largely driven by the global agenda of ILSI and its corporate members. In these two sections, I provide capsule accounts of organizational and historical information presented at greater length elsewhere, supplementing them with new research and using footnotes to direct readers to additional resources. In a few places where the discussion draws extensively on material published before, I cite the source. Basic factual information about people and organizations is reproduced without citation.

Methods and Data

The research took place in four partly overlapping phases over six years (2013–18). The first phase (2013) involved 10 weeks of fieldwork in Beijing. In preparation, I studied all published research available, in Chinese and English, on Chinese obesity, focusing on the applied or public health branch of the field (there was very little basic research). With the information gained on key institutions, individuals, and events, I constructed a working timeline of the development of China's science and policy on this issue. The fieldwork took place from October to December 2013. At its core was a set of in-depth, semi-structured interviews, 1.5 to 4 hours in length, with 25 experts on obesity or related topics. The interviewees included most of the top researchers in applied obesity research; 9 were deeply involved in ILSI's obesity work over many years. The fieldwork also involved participation in two conferences and informal ethnographic research in various settings.

The second phase (2015–17) involved analysis of ILSI-China's semiannual newsletters documenting its activities. Focusing on the years 1999 (when obesity became a concern) to 2015, I first extracted news items on ILSI-sponsored activities related to obesity (or obesity and related chronic diseases). Of the 293 items, 72 fit the criteria. I then performed a content analysis of those items. Archived in the ILSI-China Newsletter File, the analysis yielded detailed data on crucial events in the history of China's obesity science and policy making. Because ILSI was the primary organization working on obesity, and because it virtually always partnered with China's leading health organizations (Chinese Ministry of Health, Chinese Center for Disease Control and Prevention [China CDC]) and United Nations agencies operating in China (WHO, UNICEF), the items in its newsletter include almost all the scientific and policy activities on obesity in the country.

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The third phase (2014–18) entailed extensive internet research on three institutions: ILSI, the Coca-Cola Company, and the Exercise Is Medicine (EIM) Program (described below). Other valuable resources located online included IRS tax forms for all US-based ILSI entities, professional biographies of the lead scientists, conference programs of ILSI-sponsored meetings, and, of course, scientific publications. I regularly monitored the websites of China's National Health and Family Planning Commission (before 2013, the MOH), the China CDC, and other organizations for news items and policy developments, creating an archive of obesity-related policy documents for later analysis. In the fourth phase (2015–16), I interviewed the executive director of ILSI-Global and ten leading obesity experts in the US and Europe with knowledge of the global context. The China interviews were transcribed and, where relevant, translated into English, then coded for keywords and themes, producing a thematic document (Interview File).

ILSI: Public Narrative vs. Private Workings

The soda industry's main vehicle for influencing obesity science in China—and around the world—was ILSI, an unusual, industry-funded nonprofit that claimed to create disinterested science for the public good and to avoid engaging in policy advocacy. ILSI's public narrative about its aims and activities is presented in its founding documents, in its newsletters, and on its website (ilsi.org). Frequently updated, today the site emphatically spotlights ILSI's long commitment to scientific integrity. But close examination of how the organization works in practice reveals a different picture. This section illuminates those contrasting realities, disclosing the existence of hidden mechanisms by which corporate interests could quietly influence the science, and ILSI branch leaders could discreetly influence policy.

Established in Washington, DC, in 1978, ILSI describes itself as a global, nonprofit scientific organization in which scientists from three sectors—industry, government, and academia—collaborate to generate knowledge that advances human health and environmental sustainability (ILSI n.d.-a). ILSI is a complex organization comprising ILSI-Global (headquartered in DC), affiliated US-based entities such as the ILSI Research Foundation (ILSI-RF), and branches located around the world. The organization's founding president, the MIT-trained food technology specialist Alex Malaspina (1931–), was concurrently vice president of the Coca-Cola Company (1969–ca. 2001; ILSI president 1978–2001).

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Table 1 Excerpts from ILSI Policy Documents Showing Compliance with Nonprofit (501[c][3]) Requirements of the US Internal Revenue Code

Bylaws (2015)

Article I: General

Section 3. The purpose for which ILSI is organized is exclusively scientific, charitable, and/or educational within the meaning of Section 501(c)(3) of the Internal Revenue Code of 1986.

Article IV: Board of Trustees

Section 2. The Board of Trustees shall: (i) supervise, control, and direct the affairs of ILSI; (ii) establish policies and determine any changes in such policies; (iii) actively carry out ILSI's objectives; (iv) supervise the disbursement of funds; and (v) adopt such rules and regulations for the conduct of ILSI's business as shall be advisable.

Section 3(b). The thirty-one (31) member ILSI Board of Trustees shall consist of a number of Public Trustees (who are employed by or are recent retirees from universities, research institutes, foundations, and government or quasi-government bodies), at least equal to the number of Trustees who are representatives of (or recent retirees from) members.

Article X: Branches and HESI

Section 1. The Board of Trustees may approve the establishment of Branches to carry on activities in a country or a geographical region consistent with the goals and purposes of ILSI. Each branch shall be incorporated as, or be a division of, a nonprofit entity qualified as such under the laws of its particular country . . . The branch bylaws, policies, and procedures shall be consistent with those of ILSI.

Section 2. Each Branch may assess its own membership dues and fees to support activities within its designated geographical area. Each Branch is responsible for its own activities and financial affairs and for obtaining the funds necessary to support its activities.

Section 3. The Branch management shall see that all orders and resolutions of the ILSI Assembly of Members and Board of Trustees, pertaining to the Branch are carried into effect; they shall orient all personnel responsible for the operation of the Branch to the goals and objectives of ILSI and its principles of operation; they shall review the financial records and administrative operations of the Branch with the officers of ILSI; they shall coordinate Branch activities with ILSI activities through regular contact with the ILSI President and ILSI's principal office in the District of Columbia; and they shall exercise such control over the dissemination of information, produced by the Branch, as is appropriate and consistent with policies of the ILSI Board of Trustees regarding dissemination of information.

Section 4. A Branch must establish an organizational structure that will include an assembly of members and a board of trustees (or their equivalents), and may include committees, subcommittees, task forces or working groups necessary to carry on the activities of the Branch.

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Table 1 (*continued*)

Section 5. Each Branch shall submit at the annual meetings of the ILSI Assembly of Members and Board of Trustees a report of the activities of the Branch. The Branch shall also submit to the President by May 1st of each year a copy of the Branch annual financial statements for the past year.

Code of Ethics and Organizational Standards of Conduct (2009)

Principle 1. Scientific Integrity

All ILSI projects must have a primary public purpose and benefit, and must address issues of broad public health interest.

The ILSI, ILSI branch and ILSI Research Foundation Boards of Trustees must be composed of at least 50 percent public sector members (primarily academic); the remaining trustees represent ILSI member companies.

All ILSI committees and task forces must have scientific advisors from academia or government to ensure multi-sector input and balance [and ILSI will only undertake activities for which there is broad interest and support].

Principle 2. Conflict/Declaration of Interest/Bias

ILSI believes that ensuring balance of perspectives is the most appropriate way to ensure that the impact of any potential conflict of interest or bias is minimized and does not exert an undue influence on the scientific process.

To this end, ILSI operates with transparency, conducts activities objectively, and is accountable to all stakeholders.

ILSI trustees must declare any potential bias or interest, including but not restricted to financial interests, and may be asked to recuse themselves from voting on issues that might be construed as conflicts of interest.

Scientists who work with ILSI are expected to act in accordance with their own institution's conflict of interest policies and with applicable laws, as well as comply with the conflict of interest policies of any journal or organization with which they may work, including ILSI.

Principle 3. Advocacy

Advocacy of any kind is strictly limited to promotion of the use of evidence-based science as an aid in decision-making. ILSI does not conduct lobbying activities.

Note: HESI = Health and Environmental Sciences Institute.
Sources: ILSI 2009; ILSI 2015.

ILSI is funded by several hundred member companies, mostly in the food, beverage, chemical, and pharmaceutical industries. ILSI's membership is composed of the member companies of all the ILSI branches, whose representatives form the Assembly of Members. ILSI is governed by its Board of Trustees (for its duties, see table 1). As the core founding company, a major funder, and the corporate home of its long-term president, Coca-Cola was a predominant force in the organization (Sourcewatch 2016).

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A Public Narrative of Unbiased Science and No Policy Advocacy

Since the early 1980s, ILSI (and affiliated units such as ILSI-RF) have been incorporated as nonprofit, tax-exempt "charitable, scientific, and educational" corporations under US tax law. This desirable designation not only surrounds ILSI with an aura of public service, it also has financial benefits, allowing member companies to deduct contributions to ILSI and exempting ILSI from paying federal income taxes on funds it receives (ILSI 1985). To qualify for the nonprofit (501[c][3]) designation, an organization's activities must be primarily for public benefit and may not involve lobbying or making policy recommendations (IRS 2019).

As an industry-funded and industry-governed organization, ILSI has had to work hard to maintain this legal status. To that end, it has created a set of legal documents spelling out its structure, operational guidelines, and ethical principles. The most important are ILSI's Code of Ethics and Bylaws (key excerpts of which can be found in table 1).[1] According to ILSI's Code of Ethics (2009), the organization's core principles are scientific integrity, minimizing conflicts of interest/corporate bias, and limiting advocacy to promoting evidence-based science to aid decision making. Its primary strategy for minimizing corporate bias of its science is to ensure a "balance of perspectives" by stipulating that at least 50% of the members of the Board of Trustees of ILSI (and those of ILSI entities) be "public-sector representatives" (members based in universities or government agencies), with the rest being "private-sector representatives" (those from industry). I call this the "50% rule," and it is critically important because participation in ILSI activities is by invitation only.

The 50% rule assumes that scientists fall into two neat, non-overlapping categories based on their primary place of employment. It presumes further that public-sector scientists are different in key ways from private-sector ones (presumably, they have fewer conflicts of interest, are less biased, and/or are less swayed by financial incentives), and that they will serve as a check on the potential interestedness and bias of private-sector representatives. I show just below that the careers of the core scientists working with ILSI on obesity did not fit this tidy public-private distinction. Yet, maintaining the distinction on paper was vital to ILSI's operations. It allowed ILSI to publicly follow a rule appearing to guarantee neutrality,

1. In response to persistent charges of unethical practice, ILSI recently underwent a major restructuring, and in 2019 the board approved new bylaws. Because my interest is in ILSI's activities before the GEBN scandal broke, my analysis is based on the bylaws and code of ethics in effect through late 2015.

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while privately availing itself of the services of some academic ("public") scientists who endorsed major corporate involvement in science. Here is the first channel through which corporate interests could find their way into ILSI's scientific deliberations. I call it the "friendly public scientists" channel, and it was critical. By determining who would be present at the policy table, it left its mark at a very early stage in the policy process, one that shaped all later stages.

ILSI-Global-Branch Relationships: A Top-Down Flow of Money and Influence

Malaspina's ambition was to build a global empire of interconnected scientific institutions. No sooner was ILSI established in Washington, DC, than he began visiting key countries to "plant the ILSI flag around the world," as his long-time colleague and ILSI-Global executive director Suzanne Harris put it in an interview.[2] In 2015 ILSI comprised a global network with 14 branches around the world. Each branch agreed to comply with the policies of ILSI's Board of Trustees in return for charters that allowed it to use the ILSI name and receive certain benefits. In that interview, Harris stressed the relative autonomy of the branches. Yet the bylaws belie that depiction, describing a relationship in which the branches were subject to ILSI-Global oversight in all essential domains (see table 1). The institutionalized power of the center over the branches, rooted in part on the financial dependence of the branches, is an important piece of the puzzle of how powerful member companies based in the US were able to use the ILSI structure to advance their agendas in key markets around the world.

A closer look at the actual interactions between headquarters and localities supports the bylaws' picture of relatively top-down control. My research revealed a host of informal, largely hidden mechanisms that ILSI-Global actors (both member companies and ILSI executives) could use to influence how scientific issues were handled in branches around the world. One mechanism, uncovered in the IRS tax forms, was financial transfers provided by a US-based ILSI entity to support favored programs. Such transfers were routine parts of doing business at ILSI, and the amounts could be substantial. Another mechanism available to DC-based leaders, which I learned about in interviews, was to provide recommendations of foreign experts to present "the latest international science" at branch

2. Suzanne Harris, interview with the author, September 27, 2016, Washington, DC.

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conferences. As noted earlier, speaking at ILSI events was by invitation only, making the authority to recommend speakers a powerful means by which ILSI leaders could shape what counted as "good science" in branches around the world. Because the branches were dependent on ILSI-Global for support, these suggestions, one can surmise, were hard to reject. A third mechanism, discovered while studying ILSI-China's newsletters, was personal visits to the branch localities by ILSI executives, who routinely used the visits to promote specific scientific ideas or public health interventions. All three mechanisms—financial transfers, expert recommendations, and leader visits—served as channels for the direct transmission of the preferences of ILSI-Global leaders and/or companies to the branches. I show shortly that all three were used to steer the way ILSI-China handled the obesity question.

ILSI-China: A "Nongovernmental Academic Institution" inside the Chinese Government

From the very beginning, ILSI's leaders viewed China as a prized target for recruitment into the ILSI family. In 1978, the same year ILSI was founded (and the year China opened for business after Mao's death), Malaspina visited Beijing and invited Chen Chunming (1925–2018) to cooperate in health work.[3] With a degree in nutritional science and 35 years of experience doing research at the Chinese Academy of Medical Sciences (variously named), Chen was one of the nation's leading nutritional scientists (Editors, *BES* n.d.). In 1982 she became director of the MOH's Department of Health and Disease Prevention (1982–84). In 1983, Chen was appointed head of the new Chinese Academy of Preventive Medicine (in 2002 renamed the China CDC), becoming a high-level government official. In 1993, she formally left government service to establish ILSI-China, where she remained until her death, initially as director (1993–2004) and then as senior advisor (2004–18).

Chen's move made eminent sense in the rapidly marketizing environment of post-Mao China. In the early 1980s, the new reform state had defunded health work and begun urging researchers and healthcare institutions to look to the market for funding (Huang 2013). As Chen explained in an interview, establishing an ILSI branch would not only give her access to funding from industry and other international sources, it would also

3. Chen Chunming, interview with the author, November, 4, 2013, Beijing.

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enable her to bring the advanced ideas of Western public health to China, which was widely perceived to be "scientifically backward."[4]

In many respects, ILSI-China conformed to ILSI's bylaws on branch organization and functioned like an ordinary branch. Its mission—bridging government, academia, and industry to provide the most current scientific information for policy decisions in nutrition and food safety—paralleled that of ILSI-Global (ILSI-China 2013a). Like the larger organization, ILSI-China fulfilled its mission by organizing conferences, task forces, and research activities, asking experts from the Chinese CDC and universities, as well as a few foreign specialists, to lend their expertise. Since China's government did not permit establishment of branches of international NGOs, to mark itself as different from a foreign NGO, ILSI's founders called it "ILSI-Focal Point in China" and referred to its funders as "supporting companies."

The China branch was distinctive in a critically important way, however: it violated the paramount rule of no policy advocacy. On paper, ILSI-China routinely described itself as a "nongovernmental academic institution" (ILSI-China 2013a). Yet, because of Chen's background as a high official, and perhaps also because of her reputed ties to one or more top-level party and government officials,[5] she worked closely with the MOH and in practice operated as a de facto ministry official. Through Chen's connections, ILSI and its supporting companies would have direct access to the policy-making process in the MOH.

Interviews suggest that this violation of the policy-advocacy rule was quietly approved at the highest levels of the ILSI organization, and it was approved because ILSI-China's close connections to the Chinese government offered ILSI-Global extraordinary benefits.[6] In our conversation, Harris, an ILSI-Global leader since the mid-1980s, remarked, "The China branch is closely linked to the government. . . . ILSI-China is part of the CDC; it's the only ILSI branch managed by the government [this is not strictly correct; see just below]. When the China branch was being established, we [Malaspina and I] agreed: 'Let them do it their way!' It's been incredibly effective and positive."[7] In other words, the China

4. Chen Chunming, interview with the author, November, 4, 2013, Beijing. For more on these narratives of China's backwardness, which were pervasive in the early 2000s, see Greenhalgh 2016.

5. Author interviews with global obesity experts: May 21, 2016, London; September 23, 2016, via telephone; October 28, 2016, Washington, DC. For more on Chen's political connections and status, see Greenhalgh 2016.

6. New material.

7. Suzanne Harris, interview with the author, September 27, 2016, Washington, DC.

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branch would be allowed to function as a virtual division of the Chinese government—only virtual, as there were formalities in place making it legitimate—despite ILSI's cardinal rule forbidding policy advocacy. ILSI-Global was happy to look the other way because doing that was so, in Harris's words, "effective and positive." The advantage of this arrangement was especially pronounced because of the vast size of the China market. "Was China a pet branch of Malaspina?" I asked Harris. "For sure!" she replied, adding, "because Coke wanted to expand in China."[8] Harris's remarks imply that Malaspina was using ILSI to advance Coke's agenda in China.

Informal Channels of Corporate Influence on Science, and of ILSI Influence on Policy

In 1999, when ILSI-China turned its attention to obesity (a story told just below), the organization had 17 supporting companies. By the mid-2010s, that number had risen to 38. The great majority were foreign multinationals in the food, beverage, and restaurant industries, including some of the world's best-known megacorporations (Coca-Cola, Danone, Hershey's, Mars, Nestle, PepsiCo, and Yum!, owner of KFC and Pizza Hut, among others). Like ILSI-Global, ILSI-China had formal mechanisms in place to minimize industry bias. At the same time, it had informal channels by which companies could covertly influence ILSI's science, and ILSI could secretly shape public policy. And it had discursive resources it could use (from the vocabularies of ILSI-Global and China's bureaucracy) to cloak both sorts of influence in legally or administratively correct language. Let us see how all this worked.

I begin with company influence on science. Just as ILSI-Global presented its science as unaffected by commercial bias, ILSI-China's public narrative insisted that supporting companies gained no commercial benefit from their association with ILSI. To ensure that companies were not advantaged, ILSI-China enforced a rule prohibiting companies from promoting their corporate logo or products at meetings. In interviews, ILSI's leaders and affiliated scientists repeatedly assured me that this rule worked to protect the integrity of ILSI's science.[9]

8. Suzanne Harris, interview with the author, September 27, 2016, Washington, DC.

9. Author interviews with Chen Chunming, November, 4, 2013, Beijing; ILSI-China deputy director (1993–2004) and director (2004–present), November 20, 2013; Beijing; former government official and nonprofit head, December 6, 2013, Beijing. For more on the strategies ILSI-China used to affirm its freedom from corporate influence, see Greenhalgh 2016.

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Yet the companies had numerous behind-the-scenes ways to quietly influence the science. A primary mode of influence was through the provision of funding. In interviews, Chen and her successor as director stressed that supporting company contributions were pooled before being disbursed, so that no company wielded outsized influence. Nonetheless, I observed two ways in which companies used their financial prowess to sponsor favored scientific or policy activities. In the "direct funding" channel, companies worked through ILSI to fund projects supporting their agendas. "If a company wants to do research," Chen's successor told me, "ILSI can coordinate it." His example was a PepsiCo study comparing the impact of breakfast foods on blood sugar; ILSI facilitated it, seeing these as "good, useful data."[10] Another "special donations" channel operated more indirectly. Each year ILSI-China's leaders set two different levels of support from which companies could choose. ILSI's leaders asked the companies to suggest activities. They made the final decisions themselves, giving no company greater weight than the others.[11] Yet when ILSI needed additional funds for specific projects or major conferences, it asked companies for special donations. My research suggests that those providing funds got something in return.

The ILSI-China setup also included informal channels by which the organization's leaders could shape, and on occasion even make, official policy. By far the most important was ILSI's unusual connection to the CDC (and its forerunner, the Academy of Preventive Medicine, which, recall, Chen had founded and led for 10 years). As recounted elsewhere (Greenhalgh 2016), ILSI was located within the CDC headquarters in Beijing and made liberal use of CDC administrative and professional staff. Because ILSI-China had no board of directors—in contravention to ILSI's branch bylaws but authorized by leaders in DC—it remained free to make decisions on its own. The fuzzy line separating what Chen called "nongovernmental science" from the government served her well. Her organization was formally distinct from the government, yet was informally deeply intertwined with it and dependent on it for resources and expertise. Chinese administrative vocabulary facilitated this sleight of hand. Technically, Chen's successor explained, the China CDC is not part of the government but is instead a "professional unit" (*shiye danwei*) supervised

10. New material. Author interview with ILSI-China deputy director (1993-2004) and director (2004-present), November 20, 2013, Beijing.

11. Author interviews with Chen Chunming, November, 4, 2013, Beijing; ILSI-China deputy director (1993–2004) and director (2004–present), November 20, 2013, Beijing.

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by the MOH. As merely a technical scientific organization, CDC's close ties to another scientific organization (ILSI-China) would be fully legitimate.[12] This bureaucratic distinction between "government agency" and "professional unit" allowed ILSI to work in full and open partnership with the China CDC—while asserting it was nongovernmental.

The tight ties to the CDC were crucial to Chen's ability to achieve one of her most important goals: helping China create sound policy on neglected public health problems. What made ILSI-China special, Chen told its corporate supporters, was its working method of turning science into programs and then policy action. Though this pledge, proudly shared in an interview and emphasized in numerous articles, would seem to violate ILSI's declaration of no policy advocacy, the organization's semantic distinctions enabled Chen to finesse the issue.[13] By maintaining that her organization simply "provide[d] scientific evidence for policy decisions" (language supplied by ILSI-Global [see table 1]), Chen was able to shape official policy while insisting she was not (Greenhalgh 2016). Chen's (and ILSI-China's) influence on Chinese policy was likely amplified by the organization's practice of cosponsoring major activities with the leading governmental and intergovernmental health organizations in the country (China's MOH and CDC, UNICEF, WHO). These collaborations worked to give the events the semblance of important official activities while presenting ILSI's head as a leader of the same stature as the leaders of those august bodies.[14] The partnerships thus functioned as another channel through which ILSI-China's leader was able to influence official policy. To show how these mechanisms worked in practice, I turn now to the second part of the article, ILSI's response to the growing obesity threat. I start with the concerted efforts ILSI undertook at the global level before taking a closer look at how that global strategy played out in China.

Making Obesity Science and Policy: ILSI-Global in Action

Since its founding, ILSI has worked on a handful of health and safety issues affecting member companies. In the mid- to late 1990s, a new concern was emerging. The growing alarm about the newly discovered epidemic of

12. ILSI-China deputy director (1993–2004) and director (2004–present), interview with the author, November 20, 2013, Beijing.

13. Chen Chunming, interview with the author, November, 4, 2013, Beijing; ILSI-China NF 2001.

14. New material.

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Table 2 Phases in the Science- and Policy-Making Process Where Corporate Actors Might Intervene

(1) Naming the policy actors
(2) Framing the problem and solution
(3) Creating scientific rationales
(4) Creating policies and programs
(5) Promoting the rationales and programs
(6) Incorporating them into official policies and programs

Notes: This is a heuristic framework created to pinpoint where in the policy-making process Coca-Cola was able to intercede. Real-world policy-making is much less orderly than this simple schema implies. Table excludes phases not analyzed in the article (implementing the policies and programs, policy effects, and so forth).

obesity among Americans was becoming a public relations disaster for Coca-Cola and other companies that formed the core of ILSI's membership. Key members of ILSI's board were keenly aware of the growing threats to corporate profits and reputations (Mudd and Hill 1999). Prominent obesity experts such as Kelly Brownell, then at Yale, were blaming the food and beverage industries and urging the institution of soda taxes (Brownell 1994; Jacobson and Brownell 2000). Word was out that the US surgeon general was preparing a major report on the looming health crisis (Office of the Surgeon General 2001). Fueled by memories of the surgeon general's 1964 Report on Smoking and Health, there was a palpable fear that soda would become the next tobacco.

Led by a handful of food company executives and their scientific advisors, ILSI took action. Over a span of 20 years (1995–2015), a series of three US-based ILSI entities labored, largely out of public view, to create, elaborate, and widely circulate a science of energy balance to buttress a solution to the epidemic that had little support from the wider scientific community. In this section I trace this history, uncovering more mechanisms by which member companies were able to quietly use the organization to pursue commercial ends, and identifying the points or phases in the policy process where Coca-Cola was able to intervene. For analytic purposes, I distinguish six standard phases of the policy process (see table 2). Because of the extraordinary complexity of the science- and policy-making process, which unfolded globally and locally and involved actors in multiple sectors (government, nonprofit, academia, corporation), in this and the following section, I simply mention the policy phase in the heading. In the conclusion, I bring all the findings together.

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ILSI-RF: How Physical Activity Became the Priority Solution (Phases 1 and 2)

ILSI took its first concrete step to address the threat in 1995, when the ILSI Research Foundation (ILSI-RF) formed the Nutrition and Health Promotion Program (later pointedly renamed the Physical Activity and Nutrition Program) and invited James O. Hill (University of Colorado) to serve as scientific advisor (Kibbe et al. 2011). Hill was one of the nation's most prominent obesity experts and a frequent advisor to the US government on obesity-related issues (Hill n.d.). Hill would remain the central scientific figure in ILSI's efforts to address obesity for the next two decades. (He would become a key figure in the GEBN as well.) With pressures intensifying, in 1999 ILSI-Global took the big step of asking all branches to put obesity on their work agendas. That same year, Malaspina established the Atlanta-based ILSI Center for Health Promotion (CHP), tasking it with two projects. One was, in his own words, "combating childhood obesity by promoting physical exercise" (Malaspina 2013). Note that the agenda was not to find the best policy solution to the epidemic, it was to promote exercise in the name of obesity prevention. I call ILSI's approach the "exercise-first solution." It prioritized physical activity but, because in the solution's underlying framework energy burned through exercise had to balance energy consumed through eating, it called for some industry-acceptable dietary changes.[15]

The exercise-first solution—which would be ILSI's (and Coke's) preferred approach for the next 15 years—was not supported by the weight of scientific opinion. While exercise was important for obesity prevention and maintenance of weight loss, most experts—including Hill—had maintained that dietary restraint was a critical component of efforts to prevent and manage obesity. The findings from the National Weight Control Registry (which he cofounded) had shown that those who lost weight and kept it off did so by maintaining low-fat, low-energy diets and sustaining high levels of regular physical activity (Klem et al. 1997). In a 1998 article with John C. Peters published in *Science*, Hill wrote that regulation of food intake was the primary factor in weight maintenance, lamenting that Americans' ability to eat healthfully was being undermined by the spread of high-fat, energy-dense foods and the supersizing of portions (Hill and Peters 1998). To understand the factors behind the rise in obesity, they

15. Dietary messages typically associated with the energy-balance approach include calories count, but all foods and drinks can be part of a healthy diet as long as calories consumed are in balance with calories burned. There are no "good" and "bad" foods; the value of a particular food item must be assessed in the context of the whole diet. What matters is consumer (rather than corporate) choice and responsibility.

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introduced a framework that would serve them and ILSI well in the years ahead: the energy-balance framework, which posited that when calories in exceed calories out, obesity is the result. Because it could not specify which side of the equation (eating or physical activity) was more to blame, Hill and Peters urged broad changes in both the food and activity environments. Though it did not mention regulatory or legislative approaches such as soda taxes, the solution offered in the *Science* article was fairly evenhanded compared to what Hill would later propose.

Confidential documents available through the University of California, San Francisco, Food Industry Documents Archive show that the decision to focus ILSI's efforts on promoting physical activity among children was dictated by political necessity—it was the only approach that the major food-company leaders affiliated with ILSI could agree on. In early 1999, there were wide-ranging discussions on ILSI's board about how to handle the obesity problem. These culminated in a secret, ILSI-sponsored meeting of top food-industry CEOs in April 1999 (Mudd and Hill 1999). At the meeting, key industry representatives on ILSI's board argued that collective action was necessary to defuse the criticism of the industry that was building, and to forestall regulation and legislation (such as soda taxes), before the forces lining up against the industry became unstoppable. In the sole substantive presentation at the meeting, Michael Mudd, senior scientist and vice president at Kraft, and James Hill, his scientific advisor, told the CEOs that their industry bore some responsibility for the obesity crisis, citing supersizing, the sale of fast food in schools, and widespread advertising of junk food. Insisting that the companies had to be seen as part of the solution, they proposed a wide-ranging program involving promoting healthy lifestyles—better diet and more exercise—among children. While admitting the complicity of the industry in the growing epidemic—"We cannot pretend food isn't part of the obesity problem. . . . No credible expert will attribute the rise in obesity solely to decreased physical activity"—they sought to reassure the CEOs that, since physical activity "is a big part of the issue," under their plan the debate would never focus solely on food; activity would get some attention (Mudd and Hill 1999: 16, 18).

In proposing physical activity, however, Mudd and Hill had a problem: the scientific evidence on its benefits to obesity prevention was limited. Though the speakers did not stress the shortage of supporting data, the problem was clear in the list of questions that Hill reported required research. How much have children's food consumption and physical activity changed as obesity rates have increased? Does a more active lifestyle protect against overeating? Trying to thread the eye of the needle,

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Mudd and Hill seem to have sought a formula that was scientifically plausible while allaying the worries of the CEOs that they might have to change course. But the CEOs rejected collective action, agreeing only to support the promotion of physical activity among children, a comforting plan that required little of them (Moss 2013). For ILSI, a company-funded and company-driven nonprofit, physical activity thus became the only politically viable strategy it could adopt in its effort to "make industry part of the solution." Malaspina quickly embraced it as his own and made it the centerpiece of ILSI's anti-obesity work. ILSI's public narrative of neutrality notwithstanding, on this foundational matter—how the obesity problem and its solution would be framed—corporate preferences predominated. This crucial episode reveals another channel by which private industry was able to influence ILSI's science: the use of secret, ad hoc meetings to set the scientific agenda.

ILSI-CHP: An Argument and a Model Intervention (Phases 3 and 4)

During its brief lifespan (1999–2004), the ILSI-CHP under Malaspina advanced the exercise-first agenda in two main ways. First, it developed the first of what would be a series of ILSI rationales for the exercise-first solution to the obesity crisis. In May 1999—just one month after the CEO meeting—the CHP hosted a conference on childhood obesity. In the introduction to the conference volume, Hill laid out a set of arguments that absolved the food industry from special blame, while presenting exercise promotion as the leading solution. The energy-balance framework offered useful grounds for claiming scientific uncertainty, and once again it took center stage. After explaining the model, Hill argued that the factors behind the changes in energy intake and expenditure are complex, making it impossible to single out one factor that has played the greatest role:

> It is tempting to assign blame to some particular segment . . . of society as the cause of obesity. . . . One target that has been blamed . . . is the food industry . . . but food intake is only part of the equation. . . . Physical inactivity is certainly also a contributor to obesity in children. Just as the food industry and its advertising to children has been singled out as a contributor to obesity, is it not logical to single out the computer industry, the manufacturers of video games, or the explosive growth of the Internet as contributors to inactivity? . . . Schools may also be criticized . . . [however] this is unlikely to be a useful process. . . . Child

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> obesity . . . is best understood as an unintentional consequence of broad social, economic, and lifestyle changes. . . . In a real sense, we are all responsible. (Hill 2002: 3–4)

Equally loose logics were mobilized to argue for physical-activity promotion. "We need to explore a variety of strategies" to address obesity, Hill wrote, and encouraging physical activity "is likely to be a key component of a successful strategy" (Hill 2002: 6). Although definitive data showing that exercise works are lacking, we need to move on to a solution, so let's promote physical activity.

The CHP's second contribution to advancing the physical activity solution was its creation of a model exercise program. Launched in 2000, Take 10! was a classroom-based physical-activity program for elementary school youngsters that integrated 10-minute activity breaks into the academic curriculum (Kibbe et al. 2011). Take 10! was not a weight-loss program, but it was presented as one important part of a "whole cafeteria of programs" that together would add up to a solution to the childhood obesity crisis (Peregrin 2001: 1409). Take10! was soon introduced in more than a dozen US states and became a model for physical activity programs in countries throughout the ILSI network.

"Public" and "Private": The Careers of ILSI-CHP Scientists (Phase 1)

The CHP also contributed to ILSI's project of advancing industry-friendly responses to the obesity crisis by beginning to assemble a network of loyal obesity specialists who would continue to work with ILSI in various ways during the next fifteen years. Two leaders of the GEBN began working with ILSI during this time. The first, Hill, I introduced above. The second, Hill's coauthor John Peters, served as (unpaid) CHP president from 2002–4.

The career histories of these key scientists reveal the problematic nature of the assumptions about public- and private-sector scientists that underlay ILSI's 50% rule on participating scientists. Peters had a multisectoral career, working for 26 years at Proctor and Gamble (P&G) before moving in 2011 to the University of Colorado (Peters n.d.). While based at P&G, he apparently had a courtesy appointment at Colorado (judging from the affiliations listed on some publications), and he collaborated extensively with university-based scientists (including Hill, with whom he served as co-PI on grants and coauthor on many papers) (Hill n.d.). In ILSI's terms, Peters would be classified as both a public and a private scientist. In a different pattern, Hill was consistently employed by a public university, but

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accepted grants from numerous food companies (by 1999, P&G, Kellogg's, Kraft, and Weight Watchers), and launched major initiatives with corporate funding (e.g., America on the Move, backed by PepsiCo) (Hill n.d.). Rather than two distinct kinds of scientists, with different attitudes toward corporate involvement, these core ILSI scientists were combinations and, regardless of their home institution, clearly comfortable working in a setting in which industry ultimately called the shots. The choice of these "friendly public scientists" as partners served as a powerful means by which member companies such as Coke could influence ILSI's obesity work. By intervening at this early stage in the policy process to place industry-friendly researchers in important seats at the science and policy table, the soda industry was ensuring that its interests would continue to be honored at later stages.

ILSI-NA: Coca-Cola and the Science of Energy Balance (Phases 3 and 5)

After the CHP was dissolved, ILSI work on obesity shifted to other entities. The Research Foundation took over Take 10! The real action, however, took place in ILSI-North America (ILSI-NA). Coke mobilized the branch to serve its ends, using its built-in committee structure to first create, and then widely circulate, a "science of energy balance" to buttress the case for the physical activity solution to obesity. To tell this story, I need to start with developments at Coke itself.

In the early 2000s, ILSI's major funders, including the Coca-Cola Company (and other soda giants), were becoming increasingly concerned about obesity. In December 2003, outgoing Coca-Cola chairman and CEO Douglas Daft told colleagues that obesity represented the biggest challenge the industry had faced in half a century (Pendergrast 2013). Under a new CEO, Neville Isdell, Coca-Cola soon declared that it would be part of the solution, and that it would fight obesity by promoting "active healthy lifestyles." By 2006, it had begun funding "active healthy living programs" in every country where it operated.

These programmatic investments were supported by a larger corporate effort to legitimize the physical activity solution scientifically. In 2004, Coca-Cola quietly launched a multifaceted *science strategy* (my term) to contain the obesity threat by sponsoring research supporting the exercise solution. In 2004, it established the Beverage Institute for Health and Wellness to "educate" health professionals about the benefits of active healthy lifestyles and other industry-friendly points. The company also hired Rhona Applebaum, PhD, a longtime scientific affairs officer in the

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food industry, to serve as vice president and chief scientific and regulatory officer (later promoted to chief science and health officer) (Applebaum n.d.). Applebaum would spearhead the strategy to promote exercise for obesity.

The science strategy to promote physical activity had two major prongs, which came together in the mid-2010s formation of the GEBN. In the first, the company funded individual scientists to demonstrate the value of physical activity to obesity prevention (Nestle 2018). Starting around 2008, Coke funded Steven N. Blair and Gregory A. Hand (of the University of South Carolina) to conduct "energy flux" and "energy balance" research. During 2008–15, these two future principals of the GEBN received well over $4 million for such research (O'Connor 2015a).

In the second major prong, Coca-Cola, represented by Applebaum, used the institutional mechanisms of ILSI-NA to advance and globally circulate a "science of energy balance," promoting exercise as a leading solution to obesity. In 2005, Applebaum joined the ILSI-NA board and quickly rose into the officer ranks, becoming president in 2010 and 2011 (ILSI-NA n.d-b). Applebaum remained on the board during 2012–14 before becoming ILSI-Global president in 2015 (before resigning at the end of the year). She was joined on the ILSI-NA board by James Hill, who served as trustee every year from 1997 (the first year data are available) to 2015,[16] as well as other Coke grantees, including David B. Allison of the University of Alabama at Birmingham. The lead investigator of a multiyear Coke-funded study of physical activity and obesity in children, Allison was on the ILSI-NA board from 2002 to 2015, becoming vice chair (2011–12) and chair (2013–14) (ILSI-NA n.d-b). During 2005–15, and especially 2010–15, Coke and its associates had a perceptible presence on the ILSI-NA board.

During Applebaum's presidency, ILSI-NA created the Technical Committee on Energy Balance and Active Lifestyle (EBAL) (2011–15). Technical committees are where the most important work is done, and the ILSI-NA bylaws give companies, who constitute their membership, the leading role in virtually all aspects of committee work (ILSI-NA 2015). Companies fund the work of the committees, establish the membership format and program, and select the scientific advisors. Each of these roles offers member companies means to mold the committee's science to fit corporate needs.

In 2012, the members of the EBAL committee included the nation's three largest soda companies (Coca-Cola, Dr Pepper Snapple Group,

16. Hill has remained on the ILSI-NA board since then. According to his CV, he served as "public representative" from 2000 to present (2018) (Hill n.d.).

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Table 3 Activities of the ILSI-North America Committee on Energy Balance and Active Lifestyle, 2011–15

Scientific Activities (Small Conference, Sessions, Workshops)
(1) Energy Balance and Its Components, Consensus Conference (May 2011)
(2) Energy Balance: A New Conceptual Framework (October 2011)
(3) Workshop in Collaboration with ILSI-Japan (not named) (December 2011)
(4) Workshop in Collaboration with ILSI-China (not named) (December 2011)
(5) Energy Balance: A New Paradigm (April 2012)
(6) Energy Balance and Active Living (September 2013)
(7) The Science of Energy Balance: A Model for Weight Management Intervention (May 2014)
(8) The Science of Energy Balance: What We Know and Don't Know (October 2014)
(9) Physical Activity and Energy Balance: Public Health Priorities for the Americas (November 2015)
Webinars
(10) New Science on Energy Balance: Exploring All Sides of the Equation (December 2012)
(11) Energy Balance at the Crossroads: Translating the Science into Action (August 2014)

Source: ILSI-NA n.d.a.

PepsiCo) and two food giants (Kraft Foods, Mars) (Tancredi and Milner 2012). It had four scientific advisors: Hill and Allison, John M. Jakicic of the University of Pittsburgh (an exercise physiologist), and Carson C. Chow of the National Institutes of Health (a mathematical biologist). The committee's mission was "to define the state of the science on energy balance and physical activity, its relationship to active/healthy living, including weight management, and to identify research gaps" (Tancredi and Milner 2012). With five soda and food giants engaging the services of at least two company-friendly scientists, this "technical committee" had a clear political agenda: creating science to protect the industry.

The EBAL Committee pursued its mission energetically. Between 2011 and late 2015, the committee sponsored or cosponsored 11 (identifiable) events, including 9 scientific activities (one small "consensus conference," 6 scientific sessions at larger meetings, and 2 workshops, 1 in China) as well as 2 webcasts moving the science into action programs (ILSI-NA n.d-a) (see table 3). In each of the scientific activities, the scientific advisors to the EBAL committee presented a paper; most active were Hill, Jakicic,

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and Allison. Around the time the GEBN was being constructed (2013–14), Blair and Hand, the Coke-funded South Carolina–based exercise scientists, began appearing in EBAL-sponsored events.

Close study of the activities of the EBAL Committee reveals the dense connections between Coke, ILSI, and the GEBN. Coke directly funded much of the energy balance research; ILSI then provided forums in which Coke and its grantees could circulate the findings and translate them into concrete interventions. The scientific ideas presented in those forums became important foundations for the GEBN. ILSI-NA also brought together on many occasions the principals of the GEBN—Hill, Blair, Hand, and Applebaum at Coca-Cola—perhaps cementing personal ties among them. Coke then provided additional, targeted funding, and the GEBN—a network of 150 experts from 6 continents and 18 countries, created to use the science of energy balance to develop novel approaches to obesity—was publicly born in late 2014 and early 2015 (Anschutz Health and Wellness Center 2015).

The committee's sharp focus on energy balance is clear from the events it sponsored. Their titles invariably included the term *energy balance*, often stressing its scientific character, the novelty of the approach, and even its status as a "new paradigm." The titles used the apparently neutral language of "balance" and "exploring all sides of the equation," implying that the events gave equal attention to diet and exercise. The session and paper abstracts suggest otherwise, revealing a cluster of arguments for why physical activity should be the solution of choice. Some of the most prominent rationales were:

We don't know which set of factors is more important.
Physical activity is good for health generally.
Physical inactivity is an urgent public health problem.
Physical activity changes our biology in ways that facilitate weight loss and weight-loss maintenance.
Food restriction is too difficult; balancing different components of lifestyle is more feasible.

This history of ILSI's efforts to strengthen and circulate the scientific case for activity solutions makes clear that the GEBN, far from a one-off initiative of 2013–15, was the culmination of a major investment in science making by Coke and affiliated scientists that stretched back to 1995. The GEBN has now begun to fade from memory, but it would have long-term effects in important corners of the world, including China.

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Making Obesity Science and Policy in China

These developments in obesity science unfolding at headquarters were soon felt throughout the ILSI network. In 1999, ILSI-China, at the urging of ILSI-Global, added obesity to its work agenda. In a speech delivered to an Asia-wide ILSI meeting in Beijing in 2000, Malaspina named obesity a top-priority nutrition issue for Asia, citing the Take 10! program to illustrate ILSI's work on the problem (Malaspina 2001).[17] In this striking example of the leader-visit mechanism of top-down influence within the ILSI network, Malaspina sent a clear message to all Asia branches that activity was the favored solution to this new ILSI concern.

In the late 1990s, the MOH was preoccupied with problems more pressing than chronic disease. With no other entity interested in the obesity question, ILSI-China under Chen Chunming took the lead in addressing it. In the early years (1999–2003), before Coke got directly involved, ILSI-China, using funds provided by a multinational pharmaceutical company, organized the public health community into a task force that quickly gathered relevant data and defined obesity as a disease, creating China-specific body-mass-index cutoffs.[18] Chen, in her role of de facto policy maker, then supervised the preparation of the official guidelines for its prevention and treatment. ILSI's foundational work on obesity made it the go-to organization on the obesity question. At ILSI, Chen Chunming would remain in charge of the issue. In 2004, as efforts shifted to creating public health measures to manage the growing epidemic, the physical-activity solution increasingly came to the fore. In this section, I trace the process by which ILSI-Global, Coca-Cola, and the principals of the GEBN, working in concert, used the ILSI apparatus to advance the exercise solution in China.

Promoting Physical Activity (Phase 5)

In 2004, ILSI-China began creating public health strategies for obesity control and prevention. WHO's Global Strategy on Diet, Physical Activity, and Health, while focusing on governmental efforts, also assigned companies responsibility in the fight against chronic disease (WHO 2004). Stressing her adherence to WHO recommendations, Chen began actively mobilizing multinational food companies to become partners in the effort.

17. New material.
18. A detailed history of this initial phase of obesity work can be found in Greenhalgh 2016.

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In the ensuing years, China, with its pro-business culture and state enthusiasm for market solutions, pressed the companies to assume a major role.[19] Drawing on WHO arguments about corporate responsibility for addressing diet-related diseases, Chen worked to ensure that food enterprises would be central actors in China's strategy for controlling the rise of obesity and chronic diseases more generally (ILSI-China NF 2005a, 2009). Of all the companies keen to be seen as fighting obesity, the most notable, according to the experts I interviewed, was the Coca-Cola Company.[20]

Starting in 2004, Coke and its China division became active partners in ILSI- and government-sponsored activities to combat obesity and related chronic diseases.[21] While the efforts were wide-ranging, in scientific forums the company's energies were directed largely at spreading the message that physical activity is the key to weight control. Of the activities I have identified, none recommended restricting sugary beverages or limiting advertising to children, both seen by global health leaders as essential parts of an anti-obesity strategy (WHO 2016). ILSI-China facilitated Coke's efforts by providing mechanisms by which companies could directly fund favored projects, influence the topics of scientific work, weigh in on expert recommendations, and introduce Coke-branded interventions into China's official anti-obesity campaign. (I provide concrete examples just below.) There is also evidence that Chen blocked a push by another group (the Chinese Nutrition Society) to tax sugary drinks, though that effort lay outside the scope of my research.[22]

Coke-Funded, Activity-Themed Interventions, 2004–15 (Phase 5)

During 2004–15, Coke, working through ILSI, funded a number of important training activities and interventions promoting exercise for obesity. Some were funded directly, while others were funded indirectly through intra-ILSI transfers. Because Chen worked closely with the CDC, virtually all the programs introduced through ILSI-China received governmental support. Here I trace the pathways followed by a few key investments. I have introduced these programs elsewhere (especially Greenhalgh

19. The MOH was involved in this effort as well. The politics of turning companies into "partners" is explored in Greenhalgh 2016.

20. Author interviews with hospital-based nutritionist, October 29, 2013, Beijing; CDC-based obesity expert, November 11, 2013, Beijing.

21. Other food multinationals pursued similar strategies, though none as vigorously as Coke (for examples,see Greenhalgh 2016).

22. Confidential source, interview with the author, September 23, 2016.

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2019a), but here I add new details that reveal the intricate network of invisible ties that linked Coke through ILSI to China.

In 2004, ILSI-China and the China CDC introduced "Happy 10 Minutes," a Chinese variant of Take 10! The Chinese program was funded by an intra-ILSI transfer of funds (from ILSI-CHP to ILSI-China). Chen Chunming served on the CHP board of trustees from 1999 to 2004 (ILSI-CHP n.d.). In February–May 2004 the CHP transferred $53,250 to the China CDC, which Chen asked to develop the program. In September 2004 the China CDC, working with ILSI-China, introduced Happy 10 into schools in Beijing (ILSI-China NF 2005b). Coke-China helped fund the nationwide launch event, and in 2007 Happy 10 became a standard feature of the National Healthy Lifestyle for All Campaign. Coca-Cola claimed credit for Happy 10 in its sustainability reports (calling it Happy Playtime), suggesting that Coke may have been a main funder. Though this may sound like a simple, transparent transfer of funds and program ideas from Coke through ILSI-CHP through ILSI-China to China's MOH, it was in fact cloaked in the utmost secrecy. No ILSI researcher I talked to had a clear understanding of how Happy 10 or ILSI-China was funded.[23]

Coca-Cola also invested directly in the development of exercise science in China. In 2011 Coke-China and ILSI-China launched a three-year fellowship program for young professionals to obtain training in physical activity and health (ILSI-China NF 2013a). Blair's home institution, the University of South Carolina, was a core training center and received $67,525 during 2012–13 for the work (ILSI n.d-b).

In the 2010s, the most important Coke-supported project in China was Exercise Is Medicine (EIM, 2007–), a global partnership encouraging physicians to include physical activity in patient treatment plans. Coca-Cola was EIM's founding corporate partner and it aspired to global coverage (Thore 2015). In a 2013 conference presentation in China (described below), Applebaum listed EIM as one of the partnerships through which Coke promoted exercise, suggesting its continued salience at the company (ILSI-China 2013b). Sponsored by ILSI-China and the American College of Sports Medicine, from 2012 EIM-China held numerous training events for clinicians (ILSI-China NF 2013b). Blair, who had been instrumental in developing EIM in the US, was involved in designing and/or developing the China program (author's field notes 2013; ILSI-China 2013b).

23. Author interviews with university-based obesity expert, November 8, 2013, Beijing; China insider, November 22, 2016, Boston.

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This is just a handful of the many programs Coke funded, directly or indirectly, to promote physical activity for obesity in China. Some were incorporated into the government's main anti-obesity initiative. In 2013, for example, the company showcased its work promoting healthy lifestyles at a pavilion at the China Health Forum sponsored by ILSI and the Office of the National Healthy Lifestyle for All campaign (ILSI-China NF 2013c).

The GEBN Delivers Its Message in China (Phases 1, 5, and 6)

Coke-affiliated foreign experts were highly visible in ILSI-China's conferences, often invited to give the keynote presentations. Three Coke-connected scientists were the featured speakers at a major international conference on obesity control and prevention in China in late 2013.[24] These individuals—Applebaum, Hill, and Blair—were (as just noted) the principal forces behind the Global Energy Balance Network, which they were just then assembling behind the scenes. In a striking example of the "special funding" mechanism of corporate influence on ILSI, four companies were listed as supporters of the meeting, with Coke named first (see table 4) (ILSI-China 2013b). The fourth invited speaker from abroad, David Heber of the University of California, Los Angeles, was a nutritionist and chairman of the Nutrition Institute and Nutrition Advisory Board of Herbalife, another corporate supporter of the event (see table 4) (Heber n.d.).

Attended by more than 200 people, this important gathering brought together these Coke-associated speakers with leading representatives of all parties concerned with obesity in China: researchers, government health officials, clinicians, and, of course, food companies (ILSI-China NF 2013d). In organizing the conference, ILSI collaborated with important official and quasi-official bodies, making it a quasi-official activity (table 4). ILSI's big obesity conferences had a history of being venues where national policy directions were established or affirmed, and this would be no exception. I was able to attend, observe what transpired, and talk informally with many participants, including all the invited foreign speakers.

Most likely reflecting Coke's financial support, the Coke-affiliated speakers were given prominent places on the program. Hill and Blair gave the lead presentations. Each was allocated 40 minutes, twice the time given the majority of speakers. Applebaum spoke a little later for 30 minutes. In

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Table 4 Organizations Supporting the 2013 Conference on Obesity Control and Prevention in China

Supporter
Bureau of Disease Prevention and Control, National Health and Family Planning Commission
Sponsors
Chinese Center for Disease Control and Prevention
ILSI Focal Point in China
China Physical Fitness Surveillance Center
Chronic Disease Control and Prevention Society, Chinese Preventive Medicine Association
Organizers
ILSI Focal Point in China
Executive Office of the China Healthy Lifestyle for All Initiative
Special Thanks
Coca-Cola Beverages (Shanghai) Ltd.
Nestle (China) Ltd.
Herbalife (China) Health Products Ltd.
COFCO Corporation

Notes: Listed in the order given on the program. Table uses official names of the organizations. In March 2018, the National Health and Family Planning Commission was dissolved and replaced by the National Health Commission.

Source: ILSI-China 2013b.

their presentations, the three GEBN principals reiterated the arguments for physical activity developed by the EBAL Committee, delivering them directly into the heart of China's obesity science, policy, and health care community (see table 5 for details). With these talks, exercise-first science and policy solutions were presented to China's public health community as the best of international thinking. Heber spoke after the others and used his 40 minutes to promote a diet with ample color (red, purple, green) (ILSI-China 2013b). In a brief chat during a break, he told me he "didn't necessarily agree" with the other speakers, before making it clear he had no interest in talking further (author's field notes 2013).

Pressed by three of the invited speakers, the argument for physical activity solutions seems to have met its mark. In the conference wrap-up session, Chen Chunming, the undisputed leader of China's obesity field,

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Table 5 Main Energy-Balance Messages of Three Coke-Affiliated Speakers at the 2013 Conference on Obesity Control and Prevention in China

James O. Hill ("Reducing Obesity")

Hill described the "energy balance system" and the critical role of physical activity in improving metabolism and, in turn, achieving weight loss and weight loss maintenance. He then raised some urgent questions at the center of the wider debates on obesity, only to dismiss them as unanswerable. On a slide labeled "Where's the Data?" he listed a host of contentious issues—sodas and obesity, marketing and obesity, fast food and obesity, vending and obesity, physical activity/inactivity and obesity. Just below were his conclusions: "We'll never get the data—too complex" and "Problem is too great to wait for the data." How then should we reduce obesity? The answer was: "Move More and Eat Smarter." Recommendations for smart eating took up one slide (titled "food plan") out of 49.

Steven N. Blair ("Studies of Energy Balance: Crucial for Understanding and Managing the Obesity Epidemic")

Blair delivered a hard-hitting, data-packed presentation that challenged the findings of the many mainstream obesity specialists who advocated dietary change. After explaining common misunderstandings of the energy balance model, he shared the results of his Coke-funded Energy Balance Study. Maintaining that "overweight is good for you, and class 1 obesity is not so bad," he concluded with his signature (if controversial) claim: "Is physical inactivity more important than obesity as a public health problem? Yes." In the conference wrap-up session, he spelled out the policy implications: "[It] will be controversial [but] let's forget about weight . . . Focus on healthy living . . . If you're active and fit, your weight doesn't matter very much . . . The US. . . . ha[s] proven that focusing only on weight loss . . . does not work. Let's drop [the] focus on weight, let's try something else."

Rhona S. Applebaum ("Promoting Active Healthy Lifestyles: Making a Difference Together")

Declaring that "well-being starts with energy balance," Applebaum delivered a passionate endorsement of Coke's "science-based" approach to obesity. That approach—supported by the findings of large-scale, Coke-funded research projects—involved three elements: "Education" (stakeholders knowledgeable about energy balance), "Variety" (no- or low-calorie options constituting 25% of Coke products), and "Physical Activity" (investment in "physical activity and nutrition education programs" everywhere Coke operates). This was the practical application of the science of energy balance that Coke had been supporting since the early 2000s.

Sources: ILSI-China 2013b, 1–36, 62–76; author's field notes 2013.

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contended that Blair's approach—which claimed that the real problem was inactivity, not obesity—should become a national priority: "[One] strategy is smart eating. . . . Also, the importance of physical activity. . . . BMI is not that important. This shall be our goal: become fit. Physical exercise is a must. This is another thing we learn[ed] from this meeting" (author's field notes 2013). Chen's comments suggest that Blair's views and those of Hill ("smart eating") had influenced Chinese thinking at the highest level.

Impact on China's Anti-Obesity Activities and Policies (Phase 6)

Through its funding of such activities, Coke was able to exert quiet influence on ILSI's and, in turn, China's approaches to obesity. Analysis of ILSI-China's newsletters shows that, between 1999 and 2015 a growing proportion of obesity activities the organization sponsored (scientific and policy related) focused on exercise (rather than diet) (see Greenhalgh 2019a). In 1999–2003, no ILSI-sponsored obesity activities focused on physical activity (most dealt with measurement issues). In 2004–9, some 37% did, and by 2010–15 fully 60% centered on physical activity.

China's official policies and plans to combat obesity and related chronic conditions introduced in 2016–18 were also skewed toward physical activity in some ways (Greenhalgh 2019a,b). While these plans advocated both better diets and more exercise, in the key area of health targets and indicators, they placed greater weight on physical fitness. Concrete policies stressed consumer responsibility and education, not industry regulation. Dietary strategies (nutrition education, dietary guidelines) remained in place, but they were increasingly accompanied by calls to incorporate activity into diet-related disease control. China's 2016 dietary guidelines (created by the Chinese Nutrition Society, not ILSI) for the first time called for limiting added sugars and sugary drinks. Whether this change had any connection to Chen Chunming's rapidly declining health (and hence, perhaps, reduced influence), or Coke's dropping its aggressive agenda on obesity, we will never know; but it represents progress. Nonetheless, policies recommended by WHO but opposed by industry—taxing sugary drinks and restricting food advertising to children—were absent. Though the impact on obesity policy cannot be quantitatively assessed, China's policies were consonant with Coke's position as transmitted through ILSI-China. And that is true even of the sugar limits. Today, post-GEBN scandal, Coca-Cola is on board with the sugar agenda, claiming to fight obesity with a growing portfolio of low- and no-sugar beverages.

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There is little evidence that China is reconsidering its approach in the wake of the science-buying scandal in the US. In response to the 2019 articles documenting Coke's influence on Chinese policy, ILSI-China issued a sharp denial, saying the conclusion "significantly deviates from fact" and "no ILSI entity . . . makes policy recommendations" (ILSI 2019). The rebuttal insists that many ILSI-China obesity projects promote both dietary and physical activity solutions. That is of course true, but it misses the articles' point that over time, the balance between the two shifted dramatically in favor of activity solutions.

Although Coca-Cola stopped supporting activity science in 2015, the influence of the Coke/ILSI exercise-first agenda persists in China today. Perhaps most important, ILSI-promoted concepts now form cornerstones of major policies on diet, healthy lifestyle, and chronic disease prevention. The State Council's National Nutrition Plan (2017–30), for example, takes the slogan "balancing eating and moving" as the strategy for achieving healthy weights, and the plan calls for "further integrating physical activity and the medical system." Its first "basic principle" might be characterized as a sinified version of the ILSI model of health governance: under the guidance of the government . . . maximizing the decisive role of the market in allocating nutritional resources and providing services" (General Office of the State Council 2017).[25] ILSI-China remains active—and subject to ILSI-Global ways of doing things—and the activity programs Coke supported (EIM, Happy 10 Minutes) are firmly established, with EIM continuing to expand (EIM 2019).

Conclusion: The Need for In-Depth Research on the Scientific Nonprofits Doing Industry's Work

Clandestine corporate efforts to create industry-friendly science remain ongoing threats to the integrity of public health science and the soundness of health policy. Those efforts are often buried in the inner workings of highly sophisticated and secretive quasi-corporate organizations designed to advance industry interests while avoiding public scrutiny. Uncovering these efforts is an urgent task for scholars of health politics and policy.

For more than 40 years, ILSI, the preeminent agent for the processed-food and sugary-drinks industry, has produced science and policy recommendations on numerous issues of import to the public's health. Yet despite some important writing, ILSI remains elusive. How does it work to shape

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science and policy? How much influence has it had on our scientific understandings and policy solutions? How has it succeeded in disguising its science as unbiased for so long (until around the early 2010s)? The micro-macro-political approach used here—a combination of painstaking reconstruction of the science making/policy making with broad contextualization—allows us to move beyond existing shorthand characterizations of ILSI as a "front group" or "two-level organization," to greater conceptual clarity on the nature, workings, and impact of the organization. In the case studied, ILSI's effectiveness was rooted in the public/private duality at the heart of the organization. Beneath the public narrative of unbiased science and no policy advocacy, ILSI was home to a maze of informal channels—largely invisible to the untrained eye—that offered member companies myriad means to advance their interests. I uncovered no fewer than 12 mechanisms hidden in the structural and operational folds of three ILSI entities—ILSI-Global, ILSI-NA, and ILSI-China—and there are certainly more (table 6). Those mechanisms defied easy categorization. In some instances, ILSI actors were simply following tacit procedures that remained imperceptible to outsiders. In others, ILSI leaders broke their own rules, invented ad hoc procedures, or propagated a public account based on a legal fiction (the public/private distinction). The China case suggests that ILSI science was corporate by design, and, at least in one branch, ILSI engaged in policy making with explicit permission from the top.

Working through those hidden channels, for 20 years Coca-Cola, one of ILSI's most powerful members, succeeded in influencing the science and policy of obesity during every phase in the policy process at ILSI-Global and local-Chinese levels. Coke's influence was felt from the naming of savvy industry-friendly "public-sector" policy actors (Hill, Blair, Peters after 2011), to the activity framing of the obesity problem and solution (at the CEO meeting), to the construction of scientific rationales to buttress the activity solution (energy balance science), to the creation of activity-focused policies and programs (Take 10!, Happy 10, EIM), to the wider promotion of those rationales and programs (by ILSI-NA and ILSI-China), to their incorporation into China's official policies and programs (by Chen Chunming, at multiple points in time).

Though impossible to quantify, the evidence strongly supports the conclusion that Coca-Cola, working through ILSI, was able to redirect the science and policy of an entire nation—one that is home to more adults with obesity than any other country (NCD Risk Factor Collaboration 2016). While the unusual connection to the Chinese government made this an exceptional case, the larger ILSI organization actively promoted the

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Table 6 Informal Channels of Influence Within ILSI

	Channels for corporations to influence ILSI science (directly or through the efforts of ILSI leaders)	Channels for ILSI leaders to influence government policy	Channels for ILSI-global to influence branch activities
ILSI-Global			
1.	Name industry-friendly "public" researchers as scientific advisors, effectively making them policy actors (via ILSI leaders) (the "friendly public scientists" channel)		
2.	Call ad hoc, secret meetings to set the agenda (via ILSI leaders)		
3.			Intra-ILSI financial transfers
4.			Recommendations for scientific experts
5.			Leader visits
ILSI-China			
6.	Direct funding of favored projects (direct corporate action)[a]		
7.	Special donations for ILSI projects, with benefit expected in return (direct corporate action)[a]		

(*continued*)

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Table 6 Informal Channels of Influence Within ILSI (*continued*)

	Channels for corporations to influence ILSI science (directly or through the efforts of ILSI leaders)	Channels for ILSI leaders to influence government policy	Channels for ILSI-global to influence branch activities
8.		Location within and tight connections to the China CDC	
9.		Absence of key formal structure (board of trustees) gives ILSI-China leaders great operational freedom	
10.		Cosponsorship of activities with major governmental and intergovernmental agencies	
ILSI-North America			
11.	Place company scientists in ILSI-NA officer positions (direct corporate action)		
12.	Use the technical scientific committee structure (direct corporate action)[b]		

Note: Tentative listing of channels of influence; see text for empirical basis.

[a] There is no provision for these forms of funding in ILSI's bylaws or code of ethics. Such payments may be acceptable in one (or more) branches, but they would seem to conflict with ILSI's stated objective of creating neutral science free from corporate bias.

[b]The technical committee structure is a formal mechanism, but is included here because its workings are largely invisible, hidden by the label *technical committee*, which makes them sound specialized, esoteric, and apolitical, and thus of little interest.

Sources: ILSI-China NF, IF, and internet research (see text for details).

exercise solution throughout the global network, suggesting that the impact on obesity science and policy might be significant in other ILSI-branch countries as well.

Study Limitations

The sensitivity of the issues and extreme secrecy of the core organizations made it virtually impossible to interview some key informants, especially after August 2015, when the GEBN story became public. (The China portion of the research was not affected by these issues.) The three Americans at the heart of the GEBN scandal (Applebaum, Hill, Blair), understandably, were reluctant to be interviewed. One met with me in late 2015, but kept the conversation vague; the other two did not respond to requests for interviews in late 2016. An effort made through a third party to interview Malaspina did not succeed. I had hoped to conduct follow-up interviews with China's obesity experts, but after 2015 it became clear such an effort would not be welcome.

■ ■ ■

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