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Loss and Gain in Translation: Financial Epidemiology on the South Side of Chicago

Jennifer Karlin

In 2005 Dr. James L. Madara, the University of Chicago Medical Center's (UCMC) CEO and dean of the Biological Sciences Division, published a controversial commentary in the widely read *Journal of the American Medical Association* arguing that recent financial pressures were challenging the mission taken on over a century ago by academic medical centers (AMCs): to educate and train physicians, to perform novel medical research, and to treat the sickest and most debilitated patients (Hill and Madara 2005).¹ According to Madara, the high cost structure and specialized expertise of AMCs resulted in a lack of adequate reimbursement. At the same time, the strength of their reputations meant that they attracted patients—and subsequent revenue from treating those patients—that could be allocated to care for patients with less expense at community hospitals. In conclusion, Madara suggested that patients themselves be redistributed: lower-cost, routine-care patients should be seen at community hospitals, and patients requiring more technical, specialized treatment should receive care at an AMC.

I am indebted to all of my interviewees, who spent hours in conversation with me and trusted me during a tenuous period of time at the UCMC. I also would like to thank the Knowledge/Value Workshop held at the University of Chicago in November 2011 and the invaluable insights I received from participants. A special thank-you to those individuals involved in this dossier collaboration, particularly Kaushik Sunder Rajan, Sabina Leonelli, and Judith Farquhar. I could not have finished this essay without editorial help from Robert Saute, Jack Levinson, and Noelle Molé.

1. The University of Chicago's medical school and associated set of institutions have had different names over different times. I refer to that changing set of institutions as the University of Chicago Medical Center (UCMC), which was its formal name during the time of my ethnographic work. I also use a variety of other names including the University Hospital, the university's hospital, and the University of Chicago Hospital. As of 2012, it is called University of Chicago Medicine.

Madara's article was an unusually public way of handling institutional decision making. His proposal called not just for changes at the organizational level but also for an overhaul to the geographic distribution of health care on the South Side of Chicago and around the country. Madara was not alone in this plea to reorganize the medical landscape. An article published in *Health Care Management Review* in 1999 similarly described the "drastic steps" that 125 AMCs across the United States were taking "to survive" market pressures, including downsizing, acquisition of other hospitals, and forming strategic alliances among various types of health centers (Topping et al. 1999: 7). The dramatic language evidenced in both of these articles metaphorically refers to a model of adaptation, as if the organization itself was being forced to respond or risk extinction. The struggle of AMCs to intertwine education, research, and service and deal with the burden of patients they attract is a global story at least a century old. However, the appearance of this kind of rhetoric—popular in business discourse—in the language of health care management highlights an assumed bureaucratic and economic rationality. The metaphor naturalizes both the regulatory and financial forces and the institutions' responses to those conditions, allowing Madara and others to make sensible an argument, for example, that individual patients—not the institutions or the financial and regulatory forces—need to be redistributed.

The account above about the UCMC is not unfamiliar. In part, it tells a grander narrative about how individual, private institutions across the world express reasoned, neoliberal reactions to the decline of the welfare state as they take on the burdens of what was previously considered a collective responsibility. It is a particularly American rendition of this story given the culture of audit in US public and private research institutions, driven by the National Institutes of Health (NIH) and other large bureaucratic entities that govern the processes of biomedical research. As part of an attempt to make big science a democratic enterprise, these regulatory entities call upon institutions that receive their funding to be accountable for the scientific practices that make up their everyday work routines. In this particular instance, these audit requirements were structured around a reconstitution of the biomedical endeavor. In the early 2000s, the NIH proposed to shift the emphasis of public funding from laboratory and exploratory research into findings that would have direct applications. *Translational research* aims for the efficient transfer of basic science findings into meaningful clinical practices and outcomes, colloquially called "from bench to bedside to community."² The more

2. Translational science is also called translational medicine or translational research. I use these names interchangeably in this article.

recent development of translational research and the reorganization of the research university came to inhabit the same problem space as the much longer history of the struggle to provide care and investment in underserved communities.

The UCMC certainly organized itself, in part, around this reformulated concept of the research endeavor. In this article, however, I focus on practices that the NIH did not necessarily consider as translational, *per se*, when it developed the notion of transitional research. Rather, to understand why a new patient geography matters and what it signals in terms of shifts in population management, capital, and knowledge, we must rethink the translational activities of the UCMC as a practice of creating new categories of people and simultaneously making them fungible. Two parts to this process are outlined in this case study. The first part explains how leaders at the UCMC began by producing and enumerating new categories of people not based on medical-epidemiological categories but on the basis of their capacity to generate revenue. I call this a process of “financial epidemiology” in which the health/disease state of a person gets merged with the economics of his or her care, and then risk assessments and management decisions are made based on newly created categories of people. This article shows the processes involved in this conversion and how it becomes almost impossible to tease apart the biological from the financial once the work of naturalizing these categories is successful. Ultimately, this process led the UCMC to make an argument for a kind of mismatch between certain kinds of people and the spaces into which they are allowed.

The second translational activity involved the rendering of these biofinancial categories into social categories. This second translational step was required because the UCMC has long been held accountable to contested political economies and historical narratives in which it was embedded. Specifically, the UCMC has had to answer questions concerning power differences among elites and vulnerable populations. As such, the UCMC had to make sure that these constructed categories were understood not as depersonalized and entirely enumerative but as sociological—that is, oriented or directed to social needs and problems—in a way that other medical institutions did not have to do. This process of category socialization required the UCMC to acquire expertise in areas of social knowledge that are not usually considered the purview of clinical biomedicine.

To present this argument, first I outline some of the historical and political economies that contextualize the UCMC today. Second, I offer a detailed analysis of the enumeration and categorization processes performed by financial officers at the UCMC. This part suggests the importance of reconstructing space as fundamental for these transformations to be successful. Third, I situate all of these

activities within the bureaucratic realities of audit culture and discuss the development of the recent emphasis on translational research in the biomedical research paradigm. This particular reformulation of how biomedical research should proceed implies a shift in epistemic virtues—for example, to efficiency, immediacy, and transparency—which may not have been as critical to other formulations of the scientific process. I discuss the moral implications of these practices and suggest that the cultivation of these virtues is dependent on the specifics of local histories and politics where the research is carried out. Fourth, I analyze the work that the UCMC had to do to render social its newly developed biofinancial categories. I conclude by suggesting that these kinds of translational activities have broader implications for shifts in capitalization and epidemiology.

Articulations of Local and Global Geographies

Located on the South Side of Chicago, the UCMC is immediately surrounded by a large population of people who are un- or underinsured in terms of health care. In the early 2000s, UCMC institutional leadership feared that the financial burdens supposedly imposed by the predicament of its location would undermine its ability to pursue technological advancement. This is an iteration of a long-standing conflict for the university as it negotiates its responsibility to serving people in its immediate surroundings and simultaneously is called upon to produce knowledge that can be useful universally.

Constantly changing demographics and dynamics on the South Side of Chicago have resulted in different interactions between the university and its neighbors at different times. When the University of Chicago opened in 1892 with an initial donation from John D. Rockefeller, the South Side communities were immigrant and mixed neighborhoods of Welsh, Irish, Jewish, and some black residents. Articles in 1922 from the local newspaper, the *Hyde Park Herald*, describe the university's growth as positive. However, sentiments started to change after the first great migration of southern blacks occurred between 1919 and 1950, when many African Americans moved north to Chicago looking for work mostly in industry. Robert Maynard Hutchins, president of the University of Chicago until 1945, supported restrictive covenants especially around the university by providing legal testimony and funding to keep them in place. With white flight quickly transforming the demographics of neighborhoods, the university struggled to figure out if it could survive in that particular environment and what would be required for it to stay. It began to see urban renewal plans as a potential answer to that question, and it thus supported the bulldozing of decaying residences as well as the closure

of thriving businesses (Reitzes 1958: 124–25). The university sought to remove robust commercial activity from its immediate location, thinking that commerce was bringing riffraff to the area. In the end, on nearly two hundred acres surrounding the university, structures were torn down and in their place, three new shopping centers, 250 town houses, two apartment buildings, and various university housing units were built (Levi 1992). Meanwhile, the university also started to actively encourage faculty to live in the Hyde Park / Kenwood neighborhood by assisting faculty with mortgage subsidies.

The South East Chicago Commission (SECC) was founded along with the Hyde Park–Kenwood Community Conference (HPKCC) in 1949 after the university made a new commitment to stay in Hyde Park. Julian H. Levi, the first president of the SECC, believed that the university’s sustainability required a “compatible host community” that was intended to be “an integrated community of high standards,” and Hyde Park became the model of a self-consciously integrated neighborhood (HPKCC 2010; anonymous author interview, Chicago, IL, May 2010).³ The University of Chicago set out geographic limits as the area to which it was directly responsible: Forty-Seventh Street to the north, Sixty-First Street to the south, Cottage Grove to the west, and Lake Michigan on the east. The original reception of the SECC, as noted in editorials in the *Hyde Park Herald*, seemed positive. One woman wrote a song about it, and several editorials hailed the SECC and the plans for developing Hyde Park as a model for the nation/world to follow (see Reeve 1952; *Hyde Park Herald* 1953).

Specifically in regard to the hospital’s interactions, the university’s planning approach to race relations in the first half of the twentieth century tended to isolate the UCMC from its local neighbors, except those in the immediately defined neighborhood described above. Up until 1945 the hospital denied care to black patients. During the 1970s, when most medical schools saw widespread success in making community arrangements with other types of hospitals, including community hospitals and veterans’ hospitals, the UCMC attempted, but failed, to create lasting partnerships with other Chicago hospitals. Different specific conditions explain the failures at different times but include Chicago’s racial politics, the university’s arrogance regarding its perception of merging general practitioners with academic physicians, and political turf wars. Vanessa N. Gamble (1993), for example, argues that the failure of the Provident Hospital collaboration with the University of Chicago in the 1930s was due to a confluence of policy differences,

3. The HPKCC was founded with a goal to “build and maintain an interracial community of high standards” (HPKCC 2010).

financial problems, racial politics, and university indifference that eventually sabotaged the initial goodwill and investments by multiple parties in the endeavor. In the present context, options for medical care are ever decreasing, with numerous community hospitals closing, the University of Chicago serving as the only tertiary care center, and no trauma centers located on the South Side of Chicago.

Lacking connections to a network of care facilities, the UCMC by 2006 had come to recognize that its financial problems could not be solved without addressing community health resources in a more robust manner. To redistribute patients to other care centers, for example, those resources had to be made available for and accessible to patients. The UCMC understood that educational and social service support networks, business opportunities, nutritional options, and transportation all had to be addressed to create a platform for preventative care. As such, the UCMC responded by developing the Urban Health Initiative (UHI). The UHI—promoted by First Lady Michelle Obama before she left her post as vice president for Community and External Affairs at the hospital—is a series of projects seeking to stem the tide of poor patients by forging new alliances and service agreements for the provision of health care on the South Side. The UHI was cast as a specific framework not just for clinical intervention but also for more general research into the determinants of health, specifically in urban communities.

Given years of what many perceived as hostility and arrogance, it was challenging to convince a skeptical public that the University of Chicago was hoping to strengthen community networks. At the time of the UHI's inception, the UCMC had seldom worked with people outside the institution. The Office of Community Affairs at the Medical Center had only opened in 2002. Some disparate collaborations existed in which UCMC personnel worked with community members in health-related education and research projects, volunteer hospital activities for community members, and opportunities for institutional members to volunteer at community clinics or high schools, but these activities were limited in scope and duration.

People reacted to the initial rollout of the UHI with suspicion. In response to Madara's journal article and later to the changing hospital practices that followed, medical students wrote letters of disagreement, physicians announced that they would quit, those who were or thought they might be affected by community clinic closings rallied outside the hospital buildings, South Side residents penned editorials in the *Hyde Park Herald*, and even Congress launched an investigation regarding the implications of the hospital's practices on patient care (see Japsen 2008; Cholke 2009). The *Chicago Tribune* published articles about the UCMC's

new practices regarding patient distribution, including one titled “U. of C. Medical Practices Drawing Critical Eye: Sen. Grassley Looks into Program to Dismiss Poor and Uninsured Patients” (Japsen 2008) and concurrently capitalized on the publicity by advertising on public transit: “When a hospital looks at your tumor and diagnoses it as low-profit, we have a problem.”⁴

A university faculty member, who did not work at the medical center, commented:

I think the medical center wishes the South Side didn’t exist. They see themselves as a tertiary hospital for unusual cases and the South Side complicates it. They have this fantasy that you can get a van and go get people downtown [who have money], and bring people here. I mean, just think about their advertisement that shows that you can see downtown from your hospital room window. . . . The University would like to pretend that the community didn’t exist. (Anonymous pers. comm., January 18, 2011)

This quotation illustrates a particular kind of perception about the attitude underlying decisions made by leadership at the UCMC, pointing to evidence that the hospital advertisements perform a visual technique that erases the community in exchange for the pleasure of a downtown view. It evokes the geography of the University Hospital surrounded by an undesirable neighborhood, separated from the wealthier neighborhoods located “downtown.”

Many expressed contempt that the university has access to resources that residents do not. For example, a Hyde Park resident and real estate developer remarked, “Here, we are in a company town; if the company [the University of Chicago] wants to make something happen, it can” (anonymous author interview, Chicago, IL, May 2010). The reaction was similar from an urban gardener who recently lost access to the plot of land he had nurtured for twenty years because the university, which owned the land, decided to develop it. This dismay was evidenced by the Garden Conversations project that was started by the Invisible Institute (2011) and documented the fate of the Sixty-First Street Community Garden. In another demonstration held in front of the UCMC hospital in 2009, signs protesting the lack of a trauma center on the South Side read: “The University has the money, the community has the need.” At town hall meetings in the fall of that same year, organized by the Coalition for Healthcare Access, Responsibility and Transparency (CHART) and the Southside Together Organizing for

4. Note how a financial problem for one institution begets an opportunity for profit making for another.

Power (STOP) along with other community activist groups trying to understand the hospital's new policies, neighborhood residents repeatedly expressed concerns that the university was using them as subjects for larger social laboratory experiments. Particularly, they referred to activities and research that were done when the School of Social Service Administration broke ground in 1968 and opened its Woodlawn Social Service Center with intentions to provide direct services for low-income local residents.

These particular animosities articulate with a more widely held suspicion of researchers performing biomedical studies for the sake of knowledge itself and for furthering individuals' careers rather than benefiting those in precarious positions of power. African American activists and local critics view the University of Chicago as engaging in "helicopter research," producing data and knowledge that are beneficial to consumers beyond its immediate environs and bypassing nearby residents. Further, a history of ethical breaches such as the Tuskegee syphilis experiment makes many question the motives of researchers who work in primarily African American communities (see Jones 1993; Reverby 2009; Gamble 1997). Even with subsequent governmental and administrative protocols and protections for research subjects put into place, African American research subjects—and more so, institutional researchers, even as they are involved in new research apparatuses—are explicit about their skepticism regarding biomedical research ethics writ large.⁵

Ultimately, the potential success of the UCMC's reorientation to its contested history depended on the UHI creating new allegiances with parties previously inactive and skeptical of the university's biomedical practices—community health centers, hospitals, activists, nonprofits, and faith-based organizations. The UHI was the vehicle for shifting the ways the University of Chicago could engage the community and its human and organizational resources. More importantly, however, the power of the UHI was in its ability to shift linguistic and ontological categories: to systematically reframe the problem of urban health into an opportunity for asserting UCMC's status at the "forefront" of biomedical knowledge, the steps of which I detail below.

5. Governmental and administrative protocols and protections for research subjects include the Belmont Report of 1979 and the Office of Human Research Protections, a division of the United States Department of Health and Human Services that oversees clinical research done through the NIH and sets regulations for institutional review boards, which monitor researchers' practices at academic institutions and pharmaceutical companies.

Creating Biofinancial Categories of People

Loss and Gain in Translation

Deciding who would be allowed in a particular institutional space, and then convincing others that allocating people on the basis of newly created biofinancial categories is reasonable, was the UCMC's first step in trying to manage what it regarded as a financial crisis. Madara's explanation in his article links payer status to bodies, to entrance criteria, and to cash flow. It highlights a particular way of regulating who we allow into institutional spaces on a population-based level while omitting direct discussion about the meaning for individuals who have to do the moving. The hospital administrators worked as experts in translation by creating novel kinds of people in the medical bureaucracy. The shift from an individual-based, clinical understanding to a group-based, epidemiological view of patient care is not new, but here we see the explicit creation of a category of person that superimposes the clinical directly onto the financial. Below I highlight an example of the explanatory logic used to create a 2×2 matrix that financial officers used to help balance the hospital budget. By working through the economic logic, it becomes apparent that hospital administrators changed their focus from recognizing individuals as the objects for medical interventions to seeing them as members of groups that either increased or decreased the hospital's financial resources.

As background, hospitals in the United States receive a mix of privately insured patients, noninsured patients, and publicly covered patients. Payment for hospital care is mediated through diagnosis codes for illness and procedures provided. The UCMC has about seven hundred thousand encounters with about 175,000 individuals per year. Of the dollar-weighted activity, or hospital resources, 55 percent goes toward inpatient stays in the 532-bed hospital and 45 percent to outpatient care.⁶ Because of advances in technology, services have increasingly been performed on an outpatient basis since the 1980s (Stevens 1989: 321). UCMC analysts have shown that the hospital loses money from treating patients who live in the immediate vicinity of the institution and that, in order to serve this population, it uses part of what it earns from patients who live farther away. This is a confluence of two factors: first, the lower socioeconomic status of those who live within five miles of the hospital and, second, the likelihood that people only travel long distances to get care when they are very sick. Thus sicker patients who live outside the immediate environs of the university support the UCMC's

6. All numbers about the UCMC's budget are approximations and were obtained from public forums in which financial officers appeared. Statistics of this kind that appear in this article are drawn from public announcements and were later verified through personal communication.

technology-rich tertiary care environment. Constantly experiencing a shortfall in reimbursements, the hospital must recruit more patients whose treatment is highly compensated. This geographic asymmetry between the center and the periphery has created a precarious profit margin, making it difficult to maintain a financially robust organization.

Assessing the kind of care patients receive and the revenue derived from that care generates a picture of total patient activity, a “case-mix index” (CMI) that hospitals use to track the number of individual patient-hospital encounters and the overall services they provide. The CMI is calculated by totaling the diagnosis-related group (DRG) codes, and then dividing the number obtained from that calculation by the number of discharges.⁷ The CMI accounts only for inpatient care. Outpatient services are an increasing proportion of care, and since those services are delivered over several visits, unlike the single visit of an inpatient stay, cost accounting becomes even more complicated.

To deal with the complications that result from using the usual formulas, UCMC administrators developed a new accounting method that they hoped would capture the totality of care by aggregating all the care received by each individual who used hospital services over a year (they later did this same mathematical exercise with patient data over a three-year period). They then differentiated those individuals as either “complex” or “general” cases. A hospital financial administrator explained:

You know, looking at 175,000 individual people only as individuals and never grouping them would be silly. I mean, we group them into obstetrics and into general medicine . . . you have to organize it some way, right? An expensive inpatient admission might be a \$50,000 cost. You could have someone who had twenty-five ambulatory cancer treatments, each of which is \$2,000 very easily. And that would also be \$50,000. Those two patients in my book were equally complex, 'cause they equally required the same amount of society's resources to treat. That's what I mean by complex. And if people don't like that definition, just call it expensive, if you want. We decided to call the small percentage of individuals who use a large percentage of our resources “complex.” And everyone else

7. The DRG was developed in the 1980s, pioneered in the New Jersey Medicaid program to contain costs. Prior to the DRG, hospitals were reimbursed on a cost basis and, as such, had little incentive to control costs because their expenses were fully covered. DRG reimbursement pays hospitals prospectively, based on medical conditions. The federal government adopted this method of payment in 1983 for Medicare, and other state Medicaid programs and many private insurance plans followed subsequently.

we decided to call “general.” (Anonymous author interview, Chicago, IL, October 2009)

Traditionally, as the administrator explains, patients have been grouped onto wards in hospitals arranged by organ systems. Historians of medicine have argued that by the mid-1920s the medical profession had structured the clinical branches of medicine into major specialties organized by organ systems (see Stevens 1989; Rosenberg 1987; Starr 1984). The architecture of the hospital was based on this metaphor of the naturally organized body.⁸ This design led to corridors in hospitals dedicated to cardiology, oncology, and ophthalmology, for example. It also helped organize work practices and also tied laboratory research to clinical practice.⁹ Here the same necessity to organize work practices on what is seen as a naturally existing order is maintained. However, the hospital administrator uses cost in dollars to equalize across different domains.

To explain how the new categories of treatment related to payer mix, the hospital administrator created a 2 × 2 matrix table.

	General Care	Complex Care
Government Patients	1,000,000 visits	5,600 visits
Cost	−\$75m	−\$73m
Private Patients	72,000 visits	3,200 visits
Revenue	+\$79m	+128m

He explained:

We have very long observed, since 1985, that private insurance pays a lot more than government. That’s generally known in the world. But, you know, it’s strikingly true and gets more and more true over time. So, that provided a 2 × 2 matrix. And it explained a huge amount. (Anonymous author interview, Chicago IL, October 2009)

8. For an analysis of how hospitals tend to mirror metaphors of organizing structures of human bodies and how they are becoming more aligned with technologies that visualize the interior of the body, see Colomina 2003.

9. There was a strong impulse in the nineteenth and twentieth centuries to model academic hospitals on German and Parisian plans. Many physicians considered Germany the “mecca” of medicine in that period (see Stevens 1999: 374n1). Universities designed buildings to link laboratories to clinics, while at the same time attempting to separate pathology from its environment. The architectural organization of many of the hospitals built in the first half of the twentieth century included design elements that incorporated many ideas from these models, as examined in Ackerknecht 1967, Foucault 1994, and Canguilhem 1991 [1966]. These three books describe the Paris clinic and the changes that allowed for an attempted separation of normal from pathological within the space of the clinic.

By putting the data into the heuristic structure of an epidemiologist's relative risk table but not explicitly acknowledging this, the financial officer hopes to prove that the biggest risk of financial loss occurs in the general-government grouping, while the highest profit margin occurs in complex-private patients. The embedded logic of relative risk suggests that if the proportion of exposures can be changed, then the likelihood of an event, or outcome, will be reduced. Posing this as a problem of risk management suggests that the obvious solution to financial shortfalls is to change the mix of patients. The table is used as a representation, however, not to highlight the risk but to argue for the reasonableness of this particular solution. Through these steps of economic calculation and justification, the individual patient ends up disappearing from sight in exchange for a population-based analysis of resource allocation. The logic of risk management to improve resource allocation is part of the justification for reallocating individuals to different care centers.

This kind of reasoning goes beyond that described by Ian Hacking (1986, 1995, 1999) and others in terms of medical and psychological reasoning and the "making up of people." Instead of creating a type of person who can be produced and studied, the financial officers have collapsed clinical categories into financial categories, and it becomes almost impossible to tease apart the biological from the financial. This is a further move away from medical reasoning in which the focus is on care tailored to individuals and toward a focus on services aimed at groups and communities. The categorization of people into groups is not new. What is novel is that the UCMC rendered the basis for this reorganization as the ability of these groups to generate revenue, and more so, that it took an unapologetic tone to explain the financial motives for this categorization. The shift in the hospital's focus from caring for individuals to servicing groups and communities negates the rich literature in organizational studies of hospitals that defines *complex* as "having multiple illnesses." In the example above we see a transformation of the term *complex* to mean just "expensive." In this logic, we see the financial expert at work: translating medical categories into remunerative ones while transforming individual patients into members of medical populations with financial characteristics.

Other hospital employees express similar reflections in line with the UCMC's explanation for grouping individuals. After managing programs for five years at a community-relations office for a private not-for-profit Chicago hospital, the employee below cynically reflects on how "community" is defined by hospital administrators at most institutions as a result of the insurance business:

Working at the hospital taught me a lot about the dynamics of leadership. It also taught me how people view community. Um, how you define it

based on your location and based on your bottom line. It's based on your DRG, [*laughs*] you know, which illness is gonna bring in the most money, for the institution. And oftentimes, people feel as though as a not-for-profit that you should not be in the big money business. But in order to keep the doors open you have to make money. (Anonymous author interview, Chicago, IL, June 2010)

This quotation points to an irony inherent in a 2010 US census advertisement found on Chicago Transit Authority trains proclaiming, "If we don't know how big our Community is, how do we know how big our Hospitals need to be?" suggesting that the purpose of enumerating residents is to build appropriately sized infrastructure. The state and its institutional arms must render its environment legible, what anthropologist James C. Scott (1998) refers to as "seeing like a state," in order to manage it. The census, much like other forms of information gathering, helps the state and its public and private arms simplify complexity and manage populations. Administrators running hospitals, however, are forced to do exactly the opposite of supplying hospital rooms to meet needs: they are restricting access to beds to sustain their existing hospital infrastructure. In both instances, enumeration is at issue.

The reason the administrative experts are able to do this kind of work translating categories is because they understand their job responsibilities as requiring them to manage problems at what might be called a nonclinical scale. As another Medical Center leader justified:

The biggest issue, leaving aside narrow selfish self-interest, is the difference between the micro and the macro. I'm dealing with the macro, the systemic view of this. But in my experience in twenty-five years in health care, people work in health care because they have a deep commitment to caring for people who are very sick, as individuals. And their sense is this: an individual came into my emergency room with a GI [gastrointestinal] bleed. They are right there, in front of them. And they think, "I have an obligation to care for them." That's what we do. And getting from the macro to the micro and the micro to the macro is very difficult. (Anonymous author interview, Chicago, IL, January 2011)

This quotation highlights a central tension within the practice of medicine in the United States: a physician is trained to act for the individual in front of him or her, but, simultaneously, that individual may be part of a population that administrators have come to see as making untenable demands on the hospital.

Maintaining these two stances at once is difficult, and the two perspectives become incommensurable. An inherent conflict emerges because, in their work-

place roles, administrators perceive constraints on the medical system differently, depending on the importance they attribute to the problem of individual care. Reflecting back on conversations he had had with physicians as he was trying to explain his journal article, Madara explained that he applies a “Google Earth” technique to solving all “complex problems”—one instantiation of such a problem is how to “provide patient care in a challenging urban setting in which one has a high technology strategy and, at the same time, needs to interface with community.” He continued by posing this question: “If we have 2.5 trillion [dollars] a year to spend to take care of 300 million people, how do we spend the 2.5 trillion?” He similarly mused that it is impossible to contemporaneously maintain a macro and a micro perspective and to align the constraints that confine each.

You have to simultaneously say: “My advocacy responsibility is shared. I’m an advocate for this person in front of me. But I’m also an advocate for the 300 million.” The rules governing the universe are predictable and applicable . . . and that’s kind of like the rules governing the 2.5 trillion [dollars] and the 300 million people. But when you go down to the subatomic level, in this case to the individual physician-patient interaction, the rules now change, just as the rules change at the subatomic level of the universe. (Author interview, Chicago, IL, January 2011)

Madara assumes that aggregation of small units creates predictability and stable knowledge that can be acted upon. Like the financial officers and their 2×2 table, it is the grouping and the comparison that these administrators believe allow for allocation. The “rules” that limit the same kind of perspective and control at the subatomic, or doctor-patient relationship level, are not elusive; they are material and refer to specific constraints that limit the perspectives any individual can hold. Madara refers to the subatomic level, which is invisible, likening that kind of invisibility and uncontrollability to interactions among people. This suggests the importance of the way that space is being reorganized and managed; perspective and the definition of parameters become the defining forces in the equation.

In summary, there are several tensions at play in the UCMC setting: first, there is the professional tension between doing bench science and focusing on clinical outcomes; second, there is the institutional tension between the medical demand to treat people and the financial demand to sustain the institution; and, third, there is an ontological tension of categorization between an individual-centric approach (the clinical) and a group-centric approach (the epidemiological). Attempts at resolving these contradictory stances could not be solved through institutional adaptation, and Madara’s solution did not work on a technical level. Solving the

problem of a mismatch of patient and care involved another step beyond redefining individuals to groups and relating those groups to financial incentives. It meant actually incorporating new social groups into the decision-making processes at the institution. Thus a spatial argument had to be made. The institution's borders had to be recalculated and its geography redefined. This implied new architectural designs for spaces that would allow for new kinds of interactions and additional parties to be involved in caregiving and institutional decision making.¹⁰ A reframing of the financial problem into a sociological one was thus necessary. Translational research provided a framework under which these management techniques could be reframed. Meanwhile, the South Side's contested history became the relief upon which the UCMC could narrate a new kind of story. These two intertwined processes of linguistic translation are elaborated in the next two sections.

Audit Culture and the Promises of Translational Research

Translational research became an option at the UCMC for reframing the problems of rearranging bodies, knowledge, finances, and historical narratives. The framework of translational medicine offered a new stream of funding and is indicative of the new pressures in research—one of the UCMC's *raison d'être*. Under an old model of doing basic research for the sake of increasing knowledge, the University of Chicago found success in applying for grants, obtaining awards, and nurturing Nobel Prize winners. Now it had to attempt to maintain its prestige within a new model that aims for quick and efficient research to solve health problems. Knowledge for its own sake was decentered in relation to its potential applications. The UCMC attempted to reframe the problem of urban health into an opportunity to meet its requirements as a knowledge generator and to produce a novel form of research within the translational framework of biomedical investigation, taking community-institution interaction as its main object of study. A cornerstone of this initiative relied on a delicate negotiation of relationships between the UCMC and South Side organizations and residents, many of whom were historically suspicious of medical authority in general and the University of Chicago specifically.

Differences in health related to categories such as race, class, and gender are widely recognized and have become a research priority during the past twenty years (see Epstein 1996, 2007; Clarke et al. 2003). While the problems of health

10. For example, a new hospital pavilion was designed with walls and ceilings that could adjust for unforeseeable future technology and participation in caregiving. For an analysis of the architectural designs of the new hospital pavilion and its implications for shifts in technology and caregiving, see Karlin 2012.

disparities and community-based research were conceptualized prior to the notion of translational medicine, the latter has become the catchall term and a key target for NIH funding. By 2010, Clinical Translational Science Award (CTSA) grants had provided more than \$2.2 billion of NIH funding to fifty-five research institutions across the country.¹¹ These grants accounted for more than 1.7 percent of the total NIH budget and about 2.6 percent of the total research grants awarded.¹² Receiving a CTSA grant makes an institution eligible for additional NIH grants that are available only to institutions that have already won such an award.

Grant funding encourages applicants to make an argument for a discrepancy and then provide a means for addressing that perceived schism, requiring outcome measurements to prove that change has occurred. For example, translational medicine assumes that there is a gap between basic science discoveries and quality or quantity of life as an outcome. Overcoming the gap promises speedier delivery of knowledge in the form of applications, either commercially via products on the market or noncommercially via instruction in behavioral change. Health disparities research similarly suggests incongruence between socioeconomic and epidemiological categories of people. Community engagement indicates a separation between noncommunity authorities/producers and “community” benefactors/consumers of knowledge. All of these research paradigms have to show first that a discrepancy exists and then propose ways to eliminate it, collapsing the previously constructed boundaries.

As new centers applied for translational research grants, they had to develop models to explain their goals and processes to solve this newly identified problem of gaps between knowledge and application. The models presented separate domains where knowledge making takes place in an isolated space: the bench (laboratory / basic science / animal models), the bedside (clinic / theoretical humans), patients (real individuals), and practice (populations/outcomes). In these models, the term *translational* signals the division, and translational medicine promises a process by which to resuture that division. The desire to shorten the distance/time from “causes” to “outcomes” recalls an efficient assembly line. How to cross this perceived separation between laboratory and clinical outcomes and show that an academic medical center could leverage its capital to partner with private entities became crucial to obtaining federal funding. The success of translational medi-

11. The NIH funded twelve institutions in 2006 and expanded to fifty-five by July 14, 2010. When fully implemented, sixty institutions will be part of the consortium. See NIH 2010.

12. Percentages were averaged by looking at the total research grants funded in the NIH budget history and dividing by funding allocated to CTSA awardees. See NIH 2010.

cine is marked by attempts to measure the steps involved in the efficient transfer from laboratory knowledge to practice implementation.

Translational science promises speed and efficiency, turning knowledge into products, an imperative developed at the turn of the millennium as private industry succeeded in sequencing the molecular genome. The completion of the Human Genome Project two years before its expected date gave the sense that successful discovery was happening faster than before.¹³ The promise of personalized medicine and molecular genetics was on the horizon (Hilgartner 1995), and after the Food and Drug Administration (FDA) approved the first molecularly targeted cancer drug, rituximab (Rituxan), in 1997, additional molecular-based treatments soon followed.¹⁴ In 2001 *Nature* published the first look at the Human Genome Project, and two years later the NIH Roadmap proposed organizational changes to streamline the process of turning basic science into clinical outcomes.

In this environment in which private industry completed the genome project first, the incentives to instrumentalize basic research took on greater importance. NIH director Dr. Elias Zerhouni's (2003) call for restructuring the NIH emphasized that "as the 21st century unfolds, discovery in the life sciences is accelerating at an unprecedented rate" (2003: 63). He advocated for "academia, government and the private sector" to pursue "pressing scientific challenges" and set up working groups to develop five-year budget plans at the NIH to meet three goals: (1) developing quantitative knowledge and a "tool-kit" including multiple databases that are "more sensitive, more robust and more easily adaptable to the researchers' needs"; (2) building new research teams that include a spectrum of workers from bench to social scientists to gain a "holistic understanding of the interplay between factors such as genetics, diet, infectious agents, environment, behavior, and social structures"; and (3) developing new forms of public-private partnerships to fund such enterprises (*ibid.*: 64). Even in the NIH's process described above, we see the embedded motifs of practicing science in the twenty-first century and having to consult with various parties and gather opinions before proceeding.

Given what has repeatedly been described as a race between public and pri-

13. For a retrospective analysis and an insider's perspective of the changes in molecular genetics and their influences on the challenges of deciphering the human genome, see Lander 2011; Collins 2010; Venter 2008.

14. For example, the first targeted anti-breast cancer drug, trastuzumab (Herceptin), was approved for use in 1998; in 2001 the FDA approved imatinib (Gleevec) after just three months of review—the fastest approval in FDA history; in 2002 the targeted drug rituximab (Rituxan) was shown to boost survival for older patients with diffuse B-cell lymphoma (see CancerProgress.Net 2011).

vate entities (see Venter 2008; Lander 2011; Collins 2010), the NIH responded by putting bureaucracy and inefficiency on notice. This plan suggests that public biomedicine was occurring too slowly, particularly in comparison to private, capital-rich ventures. Private hedge funds, for example, could more easily and quickly leverage resources than could a federal agency that has to answer to political and bureaucratic constraints. Further, given the government's public mandate to socialize its scientific knowledge, it does not seek a financial windfall as does a private, venture capital-rich company. Additionally, if basic science information produced from government-funded projects is considered a public good, free for consumption in peer-reviewed journals, then the government cannot capitalize on the sale of products in the same way that a private company, for example, a pharmaceutical company, might. The state could have tried to remove innovation from market forces, but, instead, it served as facilitator, providing individual medical and research institutions with incentives to make their research agendas complementary with market forces.

Once the notion of translational research was conceptualized, it began to appear as self-evident. It is as if once the idea was explained, everyone felt that he or she had already been doing it. When I asked an investigator to define *translational medicine*, she explained the term in relationship to her personal career trajectory:

I've worked at many levels of scientific investigation. By *levels*, I mean from studies in living people and bronchoscopy studies and sticking probes down airways, to animal studies and cell culture studies and molecular biology studies, to genetics studies in people. I had some exposure to the community and the community-outreach activities of the asthma center, though that hadn't been a research activity; rather, it was trying to be an "education and service" kind of activity. I also did some continuing education programs in asthma for community docs. So, when I say my whole career has been about translation, I mean it was, ah, pretty much that my work has been mostly with a focus toward getting asthma better [improving morbidity and mortality for patients with asthma]. (Anonymous author interview, Chicago, IL, June 2010)

This broad spectrum across research platforms—molecular, cellular, clinical, and population-based studies—is what these translational medicine models present as having already become discrete. Here translation has turned "community outreach" from an education and service activity to a research area within the framework of a new research paradigm. This quotation further highlights how a whole career of different activities within the rhetoric of translational medicine

now becomes instantaneously synonymous with “improved outcomes” or, as this researcher says “getting asthma better.” It may well be a shell game of rhetoric with these redefinitions of activities. Before, we saw a conflation of the clinical onto the financial. Here we see how process becomes synonymous with outcome.

Translation thus became not only a new institutional orientation to medical research and practice at the UCMC, but it also invoked a redistribution of expertise that required linguistic and structural rearrangements. As the UCMC attempted to gain traction in this field, it called upon institutional and community collaborators to help realign the UCMC’s relationship to its local surroundings and patient populations in ways that could be tracked. Further, to receive federal funding earmarked for translational science, the UCMC had to present its practices as adequately transparent and accountable to government auditors and its community collaborators. While translational research as an actor’s category hopes for the ability to transfer knowledge products effectively across domains and locations—from the space of the laboratory to clinics to communities—translation as an epistemological endeavor is never a perfectly fungible process. Thus, while translational research aims to produce “outcomes,” more attention is paid to each step in the translational process than to achieving an actual result. Especially when complicated and messy processes like multicultural communication, power differentials, and diverse technological platforms are involved, the ends of a useful product become even further deferred. Reaching health outcome goals may entail the inefficient processes of healing torn relationships rather than producing breakthroughs in “community health” through successful “translation.”

The Urban Health Initiative: Rendering Biofinancial Categories as Sociological

The UHI developed during a twofold fiscal crisis—the structural problem described as a mismatch of patients and the national financial crisis of 2008. The UHI ambitiously addressed the former, and its even grander vision to serve as a national model advanced despite the latter. Following Madara’s announcement in the peer-reviewed literature, the UCMC announced that it would try “to optimize societal resources” for its community and itself through a strategic commitment to restructure health care delivery in its main service area. This strategic commitment may seem like a reversal of the sentiment expressed in Madara’s article: he had seemed to focus only on how the institution’s economic situation constrained its ability to fulfill its mission, whereas the UHI explicitly expressed concern for its South Side environs. Or, as many claimed, it may have been a clever public relations tactic. It is clear, however, that the UHI and the financial restructuring

of the hospital were transformations occurring somewhat separately, yet crucially intersecting.

The UCMC reorganized its research in order to fit in with translational rhetoric. As explained in the previous section, translational research's discursive power derives from its broad hold on the universe of meanings that people ascribe to it and from its appearing as obvious. The concept is ambiguous enough to allow projections of meaning from different research backgrounds, geographical locations, and institutional cultures.¹⁵ Its definition comes to reflect the needs and assumptions of the particular fields employing the concept. The irony is that translational science implies the connecting of different fields, yet it still conveys a very specific definition that can make sense only in that discipline, reflecting its particular perspectives, needs, and technical expertise. Further, the specifics of geography and the political economies embedded in those locales where it is taken up shape the ways that institutions do their translational work—how they take advantage of incentives and operationalize the reframing of social problems, resulting in different forms of what it means to do community engagement. It is the always incomplete mediation between domains that becomes more important than fixing the domains to and from which a translation is supposedly made. The UHI was a vehicle by which the processes of mediation could occur and biofinancial categories could be rendered sociological. Those transformations are described in the following paragraphs.

The original concept and prospectus papers for the UHI were developed by a family medicine physician at the UCMC in 2006 and shared with interested physicians, administrators, and researchers at the UCMC before the UHI was made public to external parties. The UHI's launch was laid out in a PowerPoint presentation and a concept paper titled "Translating the Forefront of Medicine at the Frontlines of Health Care." The UHI set for itself three imperatives: community collaboration instead of competition; financial viability for medical care facilities, including the UCMC; and a marked decrease in South Side health disparities. By outlining these imperatives, the UCMC was trying to distance itself from its negative external perceptions and previous mode of action. Seeking to explain "why an urban health initiative now?" the academic physicians leading this charge cited Madara's financial framing and leadership, newly available funding sources for a

15. The flexibility embedded in the concept of translational research is productive in a manner similar to that which Hans-Jörg Rheinberger has argued about the concept of the gene: "The productivity of a concept such as that of an elementary unit of heredity lies in its epistemic and operational plasticity in the search for unprecedented knowledge rather than in its rigorous and unambiguous definition" (2010: 151).

community-centered approach, the multiple projects currently under way by various researchers at the university in housing and education policy, and a “research component [that] will fit well into [the] Community Translational Science Division of the Institute for Translational Medicine.” The title of the presentation and the explanation for “why now?” highlight how *translational* is simultaneously an adjective that describes the practices these UCMC personnel thought they were already doing and an explanation of purpose. Translation itself is a speech act in that it translates hidden utterances into meaningful ones.

When Eric Whitaker took his post as executive vice president of strategic affiliations for the Medical Center and associate dean for community-based research in 2007, he pronounced the UHI to be a new “Chicago school”: the Chicago School of Community Health Improvement. Likening it to other scholarly traditions, the Chicago schools of economics and sociology, for which the University of Chicago is known, he suggested that the UCMC initiative was a novel form of research and a future-forming approach to the management of ailing bodies. Besides redefining *complexity* to mean “expensive” as we saw the financial officers do in the first steps of making the categories fungible, we see that the UCMC has shifted its attention from internal reforms and financial arrangements with third-party payers to viewing the problem of a mismatch between serving its local population and carrying out its research and education mission in the following ways:

- An Individual Institution’s Problem → A System’s Problem (Not the sole problem of an individual institution)
- A Practical Problem → An Academic Problem (Generative of knowledge)
- A Problem for Experts → A Problem for Democracy (Not just a problem for experts and specialists)

The problem of individual patients draining the hospital of its financial resources was solved through the rhetoric of community and population health. In other words, it is at the point at which the “individual patient” at the UCMC disappeared that “the community” as an object for research and intervention became visible. This transformation offered a whole new set of solutions for the university. Research funding opportunities became available as its interests could now be redirected toward goals and incentives espoused by governmental auditors.

The NIH rejected many original applications for CTSA funding. It cited the absence of robust plans for community engagement, attesting to how serious its requirement was and how difficult it was for institutions suddenly to think through, understand, and build a community. The original CTSA application at the University of Chicago was rejected for lack of a strategic community engagement plan.

Resubmitting the grant, the researchers included a more sustainable methodology for interacting with their community. By discursively framing financial problems as problems of translation and community, hospitals and researchers gained financial resources because they could respond to requests for applications from the NIH and other funding sources. This logic instantiated itself not only at the UCMC but at other sites as well. An administrator of a CTSA at another academic medical center in the Midwest explained that economic incentives often drive rearrangements value systems: “I wish that the reason that this happened was a come-to-Jesus moment, that this was the right thing to do. But it wasn’t. It was for the money. They wanted that grant because a grant leads to other money” (anonymous author interview, Chicago, IL, June 2010). Policy and economic signals spoke clearly to the hospital administrators that isolationist ways were no longer viable.

Further, the transformations required by the audit culture of the NIH are not homogenous across institutions. Instead, they play out in relation to the economic and geographic logics operating in particular sites. For example, a major difference between the two most highly ranked medical schools in Chicago—the University of Chicago and Northwestern—is their particular geography. Northwestern is located on Chicago’s more affluent Near North Side, in Streeterville. How community-engagement grant money is spent and how the results of translational medicine are represented is quite different in the different landscapes. An administrator at Northwestern explained the differences between the two schools’ visions:

You know, we are not faced with that day-to-day, literal “wall around the island of our university.” We don’t have a blank slate, but we had more of a blank slate to start with. We didn’t have the ER [emergency room] problem because we’re not embedded in the community. We’re not in the location where the U of C is, where you’re surrounded by people coming to the ER who are uninsured or not adequately insured. We don’t have that here. (Anonymous author interview, Chicago, IL, June 2010)

The imagery of an institution’s geography plays a large role in how the institution responds to the grant requirements for community engagement. An employee who left Northwestern to work at the University of Chicago because she wanted to “give back to a needy population of people” explained that planting and decorating Christmas trees was a community engagement activity at Northwestern Hospital (anonymous author interview, Chicago, IL, June 2010). Community engagement on the South Side of Chicago necessitates a completely different set of aspirations and technologies.

Thus, while translational medicine may seem like a guileless, axiomatic concept on the level of grant writing and audit culture, particular institutions utilized it in partial ways fitted to their own conditions and based on their own geographic challenges. The reorganization of institutions to accommodate the actual practice of work within the paradigm of translational research and the history of suspicion regarding biomedical research in minority populations requires effective communication between new groups of people—researchers, physicians, administrators, venture capitalists, philanthropists, nonprofit community leaders and local business owners, and faith-based leaders and neighborhood residents. All of these influences make the work of translating medical and technical language into ordinary, acceptable language necessary for research to proceed. This is not a banal, passive task. Because direct translation and consent is never finally obtained, mediation is tenuous and continual, requiring attempts at clear communication between intentions, behaviors, and outcomes.¹⁶

Embedded in the reorganization of biomedical institutions within the paradigm of translational medicine are the ideals of transparency and immediacy, with hopes to turn knowledge into products and outcomes as quickly as possible. A history of suspicion about research and clinical care in minority communities makes the oft-mentioned ideal of transparency imperative in remedying this long-standing distrust. A lead researcher for the UHI mused about increased attention to different moral imperatives when carrying out his scientific work. His observations suggest the rise of a new kind of epistemic virtue:¹⁷

Transparency is one of the words that [have] been a big part of our approach. . . . It goes back to waste. There is so much inefficiency from people not being transparent about their motives. I find it is easier to be up front. For some people it is off-putting. But I think it stops us before we're too far down the path where it's not going to work. In cases where individuals come to the table with some, either history of a bad experience with the university or university researchers, or distrust, or tension, I think it's, it's an offering, it's an opening of hands. (Anonymous author interview, Chicago, IL, June 2010)

This researcher sees greater honesty as a means to greater efficiency. Even as he expresses an anxiety about the pace and speed of assembly-line translational

16. For a more elaborate description and analysis of the technologies of mediation deployed at community meetings, see Karlin 2012: chapter 4. These apparatuses foster an atmosphere that allows multiple skeptical parties to work together by encouraging a collective suspension of disbelief.

17. For a discussion of epistemic virtue, see Daston and Galison 2007.

work, he reacts to a perceived situation of mutual distrust. Both the history of research malfeasance toward black patients and the need to be accountable to auditors demand that researchers who work in these conditions be open about their agenda. For the institution to act under new conditions, it must present itself in a new frame that redescribes its actions as honest and clear, rather than hidden and manipulative. Thus, while the economic logics and pressures to produce knowledge are often referred to as the same for academic medical research centers that are considered competitors like the University of Chicago and Northwestern, geography and historical context change the specifics, the problems, and the political economies that are at stake for each institution. Definitions of words and commitments to protocols and to auditors' requests, like translation and transparency, look entirely different according to the particularities of location.

Ultimately, the UCMC's solution to its perceived financial crisis was to begin by creating new ways to understand its medical landscape and its potential patient population. The institution reorganized itself, in part, around the rhetorics set forth by the audit culture in which it was embedded. Translational research aimed to shift the emphasis in the biomedical research process from development of knowledge for its own sake to turning knowledge into applications and products at a faster pace. The translations entailed in the UCMC's transformation, however, were not solely those set forth by the NIH and others that were designing the agenda for translational research writ large. The UCMC employed a process I term "financial epidemiology." First, new categories of people based on their capacity to generate revenue were developed and simultaneously made fungible. Second, the UCMC worked to translate these biofinancial categories into sociological ones. This second step was required because the South Side and its contested history called the UCMC to account for its actions in ways that other institutions may not have had to do. Once created and then naturalized as sociological, it is almost impossible to tease apart what were originally seen as separate categories of the biological and the financial. In this way, I suggest that epidemiology itself is at stake.

In addition, once the institution's crisis was successfully rendered as sociological, funding for grants from the NIH and other philanthropic organizations became readily available. Thus translation became the expert's solution to the financial problem while generating the social and financial capital needed for the university's continuing endeavors. This is an example of how the UCMC was involved in an activity of speculation as it leveraged its existing activities with the

hope of obtaining future capital.¹⁸ This reframing work demanded a respatialization of the parameters of the biomedical endeavor, as it required new communities to come together—researchers, physicians, administrators, venture capitalists, philanthropists, and various residents in the neighborhoods surrounding the university ranging from nonprofit leaders to local business owners, to faith-based leaders, to concerned residents—in order for research to proceed. Expertise in social knowledge became critical; for example, new linguistic practices had to be developed to translate biomedical research discourse into language all parties could understand and employ. This new biomedical discourse and form of research was expected in order to fulfill the needs of novel constituencies. When it did not measure up to those needs, research was perceived as lacking transparency. As such, not only did the boundaries of the medical landscape need to be redrawn, but also new architectural forms had to come into place to accommodate new technologies of mediation and to make apparent new values in the biomedical research endeavor that developed alongside new forms of practice. The new technologies of management, developed partly as a means to deal with a burgeoning crisis, resulted in the creation of new categories and objects in the world that now have potential to become capitalized. I suggest that making categories fungible is the first step in a much longer process of biofinancialization in which epidemiology itself is potentially at stake.

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18. There are various examples of the ways the UCMC reframed its research and service activities within the rhetoric of speculative financing. For example, the UCMC began explaining itself as the largest employer on the South Side and began investing in local businesses with the notion that this current investment would create additional interest that then would help ameliorate the financial burdens currently experienced at the UCMC. For analysis of how these activities represent a speculative financial outlook, see Karlin 2012.

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