“If We Build It, Will It Stay?” A Case Study of the Sustainability of Whole-System Change in London

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Context: The long-term sustainability of whole-system change programs is rarely studied, and when it is, it is inevitably undertaken in a shifting context, thereby raising epistemological and methodological questions. This article describes a transferable methodology that was developed to guide the evaluation of a three-year follow-up of a large health care change program in London, which took place during a period of economic turbulence and rapid policy change.

Method: Using a mixed-method organizational case study design, we studied three services (stroke, kidney, and sexual health) across primary and secondary care. Each had received £5 million (US\$7.8 million) in modernization funding in 2004. In 2010/2011, we gathered data on the services and compared them with data from 2004 to 2008. The new data set contained quantitative statistics (access, process, and outcome metrics), qualitative interviews with staff and patients, documents, and field notes. Our data analysis was informed by two complementary models of sustainability: intervention-focused (guided by the question, What, if anything, of the original program has been sustained?) and system-dynamic (guided by the question, How and why did change unfold as it did in this complex system?).

Findings: Some but not all services introduced in the original transformation effort of 2004–2008 were still running; others had ceased or been altered

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substantially to accommodate contextual changes (e.g., in case mix, commissioning priorities, or national policies). Key cultural changes (e.g., quality improvement, patient centeredness) largely persisted, and innovative ideas and practices had spread elsewhere. To draw causal links between the original program and current activities and outcomes, it was necessary to weave a narrative thread with multiple intervening influences. In particular, against a background of continuous change in the local health system, the sustainability of the original vision and capacity for quality improvement was strongly influenced by (1) stakeholders' conflicting and changing interpretations of the targeted health need; (2) changes in how the quality cycle was implemented and monitored; and (3) conflicts in stakeholders' values and what each stood to gain or lose.

Conclusions: The sustainability of whole-system change embodies a tension between the persistence of past practice and the adaptation to a changing context. Although the intervention-focused question, What has persisted from the original program? (addressed via a conventional logic model), may be appropriate, evaluators should qualify their findings by also considering the system-dynamic question, What has changed, and why? (addressed by producing a meaningful narrative).

Keywords: whole-system transformation, sustainability, complexity, evaluation, health care reform, organizational innovation.

Background

LARGE-SCALE TRANSFORMATIONAL CHANGE PROGRAMS (i.e., coordinated efforts aimed at achieving rapid and extensive changes in both the services provided and the prevailing culture) are increasingly being proposed as potential solutions to inefficiency, low patient satisfaction, and poor outcomes in health services (Bergman and Beck 2009; Department of Health 2001; IOM 2003). Such initiatives—whose mechanism has been conceptualized variously as business reengineering (Patwardhan and Patwardhan 2008), quality improvement (Øvretveit 2011; Schilling et al. 2010a, 2010b), clinical process redesign (McGrath et al. 2008), human resource management (Gardner et al. 2010), capacity building (Harrison and Kimani 2009), complex adaptive system change (Hawe, Sheill, and Riley 2009; Rowe and Hogarth 2005), upgrading of infrastructure and/or information systems (Chumbler, Haggstrom, and Saleem 2011), or a combination of all these (Greenhalgh et al. 2009; Lukas et al. 2007)—are expensive, complex, difficult to implement, and challenging to evaluate (Greenhalgh et al. 2004; Perla, Bradbury,

and Gunther-Murphy 2011; Robert et al. 2010; Van de Ven et al. 1999).

The health services research literature contains only a handful of peer-reviewed empirical studies on large-scale transformation (Greenhalgh et al. 2009; Harrison and Kimani 2009; Lukas et al. 2007; Øvretveit and Staines 2007; Schilling et al. 2010a, 2010b), and follow-up studies are sparse. Our systematic literature review of the diffusion, spread, and sustainability of service-level change in health care, published in 2004 and updated in 2010, identified no papers on the long-term sustainability of transformational change (Greenhalgh et al. 2004; Robert et al. 2010), although we subsequently found two examples of this (Øvretveit and Staines 2007; Rogers et al. 2007). The topic is underresearched for several reasons: the concept is contradictory (because it implies that the transformation, once introduced, will persist without further significant changes); the theoretical literature is conflicting; there is minimal agreement on methods; and the longitudinal research in organizations raises a host of practical challenges (Scheirer and Dearing 2011; Van de Ven et al. 1999).

One of the first academics to consider the link between transformation and sustainability was the social psychologist Kurt Lewin (Lewin 1952). He described three stages: (1) “unfreezing” the status quo, (2) moving to a new arrangement, and (3) “freezing” this arrangement. This simple and linear model is reflected in the widely quoted definition from a British public-sector body established in 2001 to support system transformation: “Sustainability is when new ways of working and improved outcomes become the norm. Not only have the processes and outcome changed, but the thinking and attitudes behind them are fundamentally altered and the systems surrounding them are transformed in support” (NHS Modernisation Agency 2002, 12). This implies that the “transformed” organization will be stable and is a desirable state.

Organization and management scholars, however, tend to view sustainability with caution. They argue that even though organizational stability may indicate an unproblematic fit with the environment, it more often indicates inertia (Buchanan et al. 2005; Weick and Quinn 1999). Buchanan and colleagues proposed three possible outcomes of organizational change: decay, sustainability, and continuing development, with organizations faring the best with continuing development. Their proposal challenges earlier work by researchers who offered a somewhat

static measure of “institutionalization” (Goodman et al. 1993), and it resonates with the more contemporary notion of “routinization,” which embodies a healthy tension between stability (in which a particular collective routine is reproduced identically every time) and further change (in which it is reproduced differently in successive enactments) (Feldman and Pentland 2003).

Most empirical studies of sustainability in health care have addressed the promotion of health. An early review identified three categories of indicators: (1) maintenance of health benefits, (2) institutionalization of the program within an organization, and (3) capacity building in the recipient community (Shediac-Rizkallah and Bone 1998). The authors of this review developed a parallel taxonomy of influences on sustainability: project design and implementation factors, organizational factors, and community and environmental factors. Subsequent reviews refined and extended this triad (see, e.g., Durlak and DuPre 2008).

Many early reviews of health program sustainability talked about steps, stages, or phases. For example, Johnson and colleagues’ 2004 systematic review of 105 disease prevention programs produced a five-step sustainability planning model (assess, plan, implement, evaluate, reassess/modify), along with attention to building the capacity of the wider system to support sustainable programs (structures and formal linkages, champion roles and leadership, strategies for acquiring resources, policies and procedures, expertise) and to demonstrating and documenting benefits (Johnson et al. 2004). Such “phase models” have lost favor in the more recent literature, however, since (as with Lewin’s unfreeze-change-freeze model) they tend to imply a linear and predictable sequence and also to assume that programs will be implemented and continued more or less as originally planned. Pluye and colleagues, for example, declared that phase models are conceptually misleading, since (they argue) sustainability needs to be built into a program from the outset through measures such as stabilizing resources, creating incentives, and developing forums for communication (Pluye et al. 2005).

Scheirer distinguishes between sustainability as a process (i.e., a set of activities oriented to maintaining services beyond the original funding period) and sustainability as an outcome (the actual maintenance of those services), and she warns against confusing these “independent” and “dependent” variables (Pluye, Potvin, and Denis 2004; Scheirer and

Dearing 2011). Øvretveit distinguishes between the sustainability of impacts (e.g., patients' outcomes), of projects (e.g., particular services), of methods (e.g., particular tools and techniques), and of the capacity to improve quality (Øvretveit 2011). In an article offering a "new paradigm" for sustainability research, Scheirer and Dearing echo Øvretveit's taxonomy and add sustainability of interest in the issues, sustainability of community-level partnerships and coalitions, and program replication in other sites (Scheirer and Dearing 2011).

Øvretveit and Scheirer and Dearing all focus on the original activities and goals of a program and whether and how these have persisted. We call this the *intervention-focused* approach (Buchanan et al. 2005; Scheirer and Dearing 2011). These authors emphasize the use of robust metrics and measures, although they also acknowledge that program adaptation (which may require a change in metrics) may be appropriate as the context changes. Other authors place more emphasis on what we call the *system-dynamic* perspective, as they are less interested in whether the original activities and goals have persisted than in whether the more organic notion of continuing change is going in a positive direction. Some aspects of any program must be abandoned over time while others must expand and spread. Conceivably, all the original components may attenuate, even though (taking the system as the unit of analysis), something may still be "sustained."

In a broad-ranging systematic review, Gruen and colleagues concluded that when studying complex interventions in complex systems, intervention-focused models of sustainability had inherent limitations, and they encouraged the use of system-dynamic models to explore the evolving relationships and interdependencies. Their holistic definition of sustainability—"The ability of a project to function effectively, for the foreseeable future, with high treatment coverage, integrated into available health care services, with strong community ownership using resources mobilized by the community and government" (Gruen et al. 2008, 1580)—which requires not only the measurement of activities and impacts but also the construction of a meaningful narrative about the evolving program-in-context, offers greater analytic potential for studying large-scale transformation than do the more static models, which focus on the relationship between a set of dependent and independent variables (Robert et al. 2010). Figure 1 shows an adaptation of Gruen and colleagues' dynamic model of sustainability, which we describe later in this article.

FIGURE 1. Dynamic model of health program sustainability.

Source: Adapted from systematic review of sustainability literature, Gruen et al. 2008.

Researchers who embrace system-dynamic conceptualizations of sustainability have mostly considered this challenge in ecological terms, as the program's organic growth (i.e., adaptation and embedding in the local health economy) (Hawe, Sheill, and Riley 2009; Pluye et al. 2005; Rowe and Hogarth 2005) or as organizational sense-making (i.e., construction of a shared narrative about the problem and how it is best tackled) (Senge and Kaeufer 2000; Weick and Quinn 1999). A third framing of the system-dynamic perspective, actor-network theory, considers people and technologies as linked in ever changing and inherently unstable sociotechnical networks (Bisset and Potvin 2007).

Next we describe an empirical case study of the sustainability of transformational change and present our findings analyzed through both intervention-focused and system-dynamic analytic lenses.

Description of the Case

Our case was based in London. Box 1 explains some of the terms that may not be familiar to non-UK readers.

Box 1

Terminology Used in the Case Study

Acute trusts: In this case study (although not always in the United Kingdom), synonymous with *acute hospitals*.

Commissioning: Defined by the UK Department of Health as “the process of ensuring that the health and care services provided effectively meet the needs of the population. It is a complex process with responsibilities ranging from assessing population needs, prioritising health outcomes, procuring products and services, and managing service providers” (<http://t.co/Vyg10jkB>).

Guys and St Thomas’ Charity (the “Charity”): A London-based charity originally established with endowments from King Edward VII of England and a private benefactor. Its statutes require funds to be spent on improving the health of the population who live in the catchment area of two local hospitals (Guys and St Thomas’). This charity funded both the modernization initiative and the independent evaluation.

Modernization: In this context, a process of transformation implemented across an entire health service, or part of the service, in order to improve effectiveness and efficiency and to orient the service more to patients’ needs and preferences. The concept is explained more fully in Greenhalgh et al. 2009.

National Health Service (NHS): Includes all publicly funded organizations in the case study, including acute trusts and primary care trusts.

Primary care trust (PCT): A community-based trust that (at the time of our study) managed the provision of primary care services in a specific locality (typically covering a population of around 150,000), including those provided by general practitioners, dentists, and community pharmacies.

In 2003, Guys and St Thomas’ Charity offered £15 million (US\$234 million) to support a four-year partnership (the “modernization initiative”) of two acute trusts, two primary care trusts, community groups,

patient groups, and the independent and voluntary sector in a multi-ethnic, inner-city population with a high turnover and multiple health and social care needs. Three services—stroke, kidney, and sexual health—were selected by competitive bidding to receive £5 million (US\$7.8 million) each for “wholesale transformation” aimed at making health care more efficient, effective, and patient centered.

The modernization initiative contained more than thirty work streams representing a diverse range of projects. The methods used in the transformation program between 2003 and 2007 were (1) collecting and applying “best evidence”; (2) coordinating and streamlining services; (3) recruiting, redeploying, and training staff; (4) promoting and supporting self-management; (5) involving patients and care givers in quality improvement; and (6) ensuring diversity of provision to allow patient choice. All this was supported by tools and techniques for quality improvement, including systematic data capture with rapid feedback loops (plan-do-study-act cycles), and by a cadre of new blood service improvement facilitators (Øvretveit 2011).

The governance structures featured an overarching modernization board chaired by one of the secondary care chief executive officers, as well as operational-level management groups for stroke, kidney, and sexual health services, which brought together numerous stakeholders, sometimes with competing ideologies, visions, and agendas. The sexual health project management group, for example, had representatives from general practice, community-based family planning and sexually transmitted infection clinics, hospital-based genito-urinary medicine specialists, and various third-sector stakeholders (i.e., charitable and voluntary organizations), particularly women’s rights groups, sexual minority interest groups, and faith groups.

Our team were the external evaluators of this program from 2003 to 2008. We produced an internal report for the Charity (available from the authors), academic papers (Greenhalgh et al. 2009; Macfarlane et al. 2011), and a book (Greenhalgh, Humphrey, and Woodard 2010). In 2010, we were invited to bid for the opportunity to return to the case and see what (if anything) had been sustained. By this time, the program board and the project management structures had been dismantled, and the various activities they had overseen had either ceased or been transferred to new infrastructures and funding streams. Some of, but not all, the staff had been redeployed in the local health economy.

Methods

Study Aims

In this follow-on evaluation, we were contracted to (1) review the gains relative to the original policies and business plans, (2) explore the tension between the sustaining achievements of past projects and the continuing evolution of services, (3) identify unintended consequences, and (4) make recommendations to the Charity for future investments. We also wanted to contribute to the knowledge base in sustainability research.

Theoretical Approach

We considered sustainability from both the intervention-focused (What, if anything, has been sustained?) and system-dynamic (How and why did change unfold as it did?) perspectives. To answer the intervention-focused question, we combined two very similar frameworks developed (apparently independently) by authors in Norway and the United States to produce the six dimensions of sustainability (Øvretveit 2011; Scheirer and Dearing 2011).

To answer the system-dynamic question, we added to these frameworks two closely related (and independently developed) models from the academic literature (Bisset and Potvin 2007; Gruen et al. 2008). Following Gruen and colleagues' model, we considered three key domains (the hexagons in figure 1) and how these domains were linked together dynamically. We framed the domains as questions: (1) What are the main health concerns in the target population? (2) What are the components of the program (e.g., service models) and the infrastructure supporting these components (e.g., information systems, monitoring metrics)? and (3) What positive forces (e.g., good managerial relations) are driving the program forward, and what negative ones (e.g., competition for limited resources) are holding it back?

Next we considered the model's dynamic component, by asking three more sets of questions (the curved arrows in figure 1): (4) The dynamics of defining the health concern: How do the different stakeholders define the health problem(s), and how do their different (perhaps conflicting) interpretations of the problem(s) change over time? (5) The dynamics of delivering and monitoring the program: How is the quality cycle being delivered and monitored, and is this happening effectively and

efficiently? For example, are feedback loops (formal and informal) in place to ensure that activity is adjusted promptly in response to emerging data on performance? (6) The dynamics of stakeholder engagement: How do stakeholders interpret and frame the program as it unfolds (e.g., what language do they use to talk about it; to what extent do they value it and commit to it)? What are the struggles over priorities, resources, and responsibilities, and who is winning them? What happens with attempts to embed the program locally, including efforts to strengthen key institutions (e.g., local communities, third-sector partners)?

We supplemented Gruen and colleagues' model with Bisset and Potvin's application of actor-network theory. According to this theory, a program is more likely to be sustained when a critical alignment of people and technologies is stabilized, which tends to happen when "soft," human elements (e.g., stakeholders' differing interpretations, their feelings about the program and the power distribution among them) align with "hard," technical, and procedural elements (e.g., metrics of performance and the information systems used to collect, analyze, and circulate them) (Latour 1992). Latour observed that in any community of actors, "factual" statements about the external world are produced and stabilized (i.e., become progressively harder to challenge) through the use of *inscription devices*—a term he used to refer to the diagrams, textual notations, and so on that capture a particular set of relations between people and things. In relation to service transformation, inscription devices include metrics, indicators, and visual formats for presenting data, guidelines, and contracts.

Study Design and Methods

The study was conducted between September 2010 and August 2011. The design was a mixed-method organizational case study, following Stake's "naturalistic" approach in which multiple data sources, qualitative and quantitative, are collected pragmatically and reflexively to build up a detailed picture of events in context (Stake 2005). We built the case study from five main data sources (see table 1 for a breakdown): (1) statistics on access, case mix, quality of care, and patient outcomes; (2) documents such as business plans, service level agreements, and minutes of meetings; (3) in-depth, semistructured interviews with fifty staff and

TABLE 1
Data Sources for Modernization Initiative Follow-Up Evaluation

	Total
In-depth interviews	
Charity staff	4
Third sector (3 staff, 2 service users)	5
MI director and program managers for stroke, kidney, sexual health, end of life	5
Stroke project (3 doctors, 1 nurse, 2 managers, 3 physiotherapists, 2 service users)	11
Kidney project (2 doctors, 3 nurses, 4 service users)	9
Sexual health project (5 doctors, 2 nurses, 2 managers)	9
Acute sector managers	3
Primary care trust commissioners	2
Other (university, all-London public health)	2
Total	50
Observational visits to projects	6
Patient questionnaires (kidney dialysis)	48
Documents (approximate figures)	
Original proposals and outline documents	8
Original project plans	3
Commissioning plans before and after modernization initiative	6
Summaries of project achievements	8
Consultancy report ("Options" on Sexual Health Services)	1
Financial summaries	4
Public-facing publications, e.g., website	10

service users; (4) eight ethnographic visits to services; and (5) open-item questionnaires to forty-eight patients.

We did not attempt to draw a rigid boundary around the modernization initiative at either its inception or our follow-up. Rather, for our intervention-focused analysis, we selected a subset of activities and service models that had been prominent in the original modernization plans and that the respondents consistently identified as stemming from this initiative. We used routinely collected data (local audits, internal reports, annual reports, and external evaluations) to build a picture of caseload, case mix, access, available service models, throughput, quality of care, and patient satisfaction. The main methodological challenge was selecting valid and relevant metrics and measures to be included in the synthesis. As far as possible, we drew on "hard" metrics collected

using nationally or locally standardized methodology (e.g., waiting times, disease incidence, transplant rates, length of stay).

The sample of informants for the semistructured interviews was selected to provide the greatest variety of organizational and individual perspectives. Potential participants were initially approached by someone outside the research team. Those interested were contacted with written details of the study, and their verbal consent was obtained. Interviews were held at the informant's place of work (or, for patients, at their preferred setting in an NHS organization). Question prompts (available from the authors) were used flexibly, since some interviewees wished to focus on particular issues relevant to their own role. We audiotaped the interviews when we had consent, but because some people asked not to be audiotaped or made important comments after the tape was turned off, we also took contemporaneous notes. The taped interviews were professionally transcribed, and the researchers typed up the field notes.

Ethnographic visits to services were opportunistic: when attending organizations to obtain consent or interview staff, we were sometimes exposed to the day-to-day activities of these organizations. The settings were a sexual health clinic, three dialysis units, a community health center, a community hospital, a general practice, and a third-sector patient organization. Field notes taken at these sites were added to the data set of the individual being interviewed.

The patient questionnaire (available from the authors) was directed at those undergoing hemodialysis, since a central aspect of the kidney modernization initiative had been improving services for patients in end-stage renal failure. Patients were initially approached by a member of the dialysis unit staff. The questionnaire was administered to consenting patients by medical students (Fatima Atif and David Hill), who were trained in open-ended qualitative interviewing but who did not know the history of the project, so as to minimize their biases. Five main topics were covered by asking an open question and asking the respondent to write "free text" in a large box (or dictate for the student to write). Responses were transcribed onto an Excel spreadsheet.

Just before we were awarded the contract for this work, the patients' experiences in sexual health had been extensively audited by an independent company (Options UK), which collected a set of quantitative metrics (Options UK 2010). We included selected raw data from the Options UK report in our synthesis. The experience of stroke patients was

captured in the in-depth interviews just described, of four people living with stroke (two recruited via the NHS and two via a third-sector charity).

Data Analysis

As noted earlier, our quantitative data were descriptive statistics already collated by others (e.g., audits, annual reports). To aid data management, we initially organized the qualitative (free-text) data into broad themes using the framework approach (Ritchie and Spencer 1994). We used themes from each successive interview or other free-text source to enrich and/or modify the emerging account of the case using the constant comparative method (Strauss and Corbin 1990). Informed by the system-dynamic model of sustainability described earlier, we used narrative to synthesize the qualitative and quantitative findings into a meaningful account that teased out and sought to explain ambiguities, inconsistencies, and unforeseen consequences.

The research team regularly discussed the emerging case study. We recognized that our own subjective interpretations were likely to be influenced by our long familiarity with the program and continuing relationships with key stakeholders (e.g., we had collaborated extensively in writing a book in 2008–2010). Partly for this reason, we took particular care to confirm, refute, or revise our findings and conclusions. We presented our synthesis in an advanced but not final form to all the major stakeholders, including the funder and all interviewees, and asked them to provide feedback on both its general thrust and specific details. We followed up by email and telephone with those who did not respond, until we received a firm “no comment” response. This phase took six months—as long as the original data collection. In total, thirty-three of the fifty interviewees (including all four “dissenters”) sent in feedback, which led to substantial revisions of our original draft.

Main Findings

Intervention-Focused Analysis: What Was Sustained?

A number of service models and practices that had begun under the modernization initiative in 2004–2008 were still evident in

2010–2011. These are described in detail in a separate report (Greenhalgh et al. 2011), and some examples are listed in table 2. Many of, though not all, the sustained activities were underpinned by new business models and staff posts, either in mainstream NHS services or through a recurrent charitable budget.

Some components of the original program had been abandoned, and others had been radically changed for a variety of reasons (e.g., to accommodate budget reductions, because they proved unworkable or unpopular in practice, or in response to new national policy imperatives). For example, the “transformed” sexual health service had initially been designed for supported self-management, in which patients selected which tests to have, took their own swabs, and labeled their own specimens and were supported by health care assistants if necessary, but a follow-up audit showed that only 15 percent of the attendees were categorized by staff as “able to self-manage” (raw data available from the authors), so this aspect of the service was in the process of being scaled back. Likewise, on the dialysis units, only a minority of patients were actively self-managing; many others had rejected this option because of the severity of their illness and/or comorbidity (detailed patient questionnaire findings available from the authors). In the stroke service, a comprehensive and detailed competency grid originally introduced with the aim of upskilling frontline staff such as health care assistants had been substantially shortened, as it had proved too cumbersome for routine use.

Given the high local population turnover (with consequent changes in demographics and patterns of health need), the numerous changes inside the participating organizations (e.g., internal restructuring, staff changes, shifts in commissioning priorities) and outside them (e.g., economic recession, change of government, new national policies), the multiple subprojects in the original modernization initiative, and the extent to which their goals and direction had changed even before the funding period ended, it was not surprising that the outcomes we observed tended to have multiple interacting causes. For example, even though a local sexual health network originally established under the modernization initiative back in 2004 was still thriving in 2011, the national sexual health policy had required all localities to set up such networks beginning in 2005 (Medical Foundation for AIDS and Sexual Health 2005).

Table 2 shows that a number of service models and practices had spread beyond the original setting. Some flagship projects (e.g., active

involvement of patients in service evaluation and redesign in kidney services) had acquired a kind of unofficial “beacon” status, attracting teams who had sought to make similar innovations and who had successfully replicated the models (sometimes with adaptations) in their own service. However, efforts to spread services locally had sometimes been surprisingly ineffective, a finding that we will discuss further.

System-Dynamic Analysis: How and Why Change Unfolded as It Did

In this section, we consider the dynamic issues illustrated in the curved arrows in figure 1: changes in how the health concern was defined and interpreted, changes in how the program was delivered and monitored, and changes in stakeholders’ engagements and local politics.

The first question we asked our fifty stakeholders was, What was the modernization initiative? Not a single one responded by naming specific medical conditions, projects, or service models or by referring to the “modernization tool kit” or service improvement facilitators. Rather, forty-six of the fifty recalled the initiative in abstract and strongly value-driven terms, as a coming together of people and resources in a way that built relationships, developed a common sense of purpose, and resulted in worthwhile, patient-relevant changes in the services.

When we asked the participants what they felt had been sustained, the most common response pertained to interpersonal relationships. They cited being “able to pick up the phone” to colleagues in other organizations with whom they were interfacing in delivering complex care packages, and as having developed a shared (and evolving) sense of the health problems in the local health economy. Many of them continued to get together periodically to make sense of new problems as they arose. At the time of the original program, bringing staff and service users together across organizations (including two acute trusts with a history of poor relationships) to encourage improvements and plan new services had been viewed as a luxury made possible by generous charitable funding. Three years later, the sustained efficiency gains from whole-pathway streamlining of services were considered so great that this networking was now described as a “business need.”

The story of ongoing patient-centered improvement driven by warm relationships, a shared sense of purpose, and an ongoing process of

collective sense-making did not apply to everyone, however. An important source of data in qualitative research is “disconfirming cases”: individuals or subgroups who give different viewpoints or who do not fit the emerging explanation. Accordingly, a handful of dissenters here viewed the modernization initiative very differently. Some of these were interviewed directly (four of our fifty interviews), and others were unavailable for interview, so their perspectives were derived indirectly from documentary sources such as correspondence and minutes of meetings. They did not mention the sense of energy and shared purpose described so enthusiastically by others in our sample; they did not view “patient centeredness” as an unproblematic driver of positive change; and they felt that the early relationship-building groundwork that others had identified as essential to the program’s long-term success had been a cosmetic exercise that had borne little fruit.

Most dissenters self-identified as having not bought into the modernization initiative’s values or goals and were identified by some other interviewees as “difficult to work with.” All parties attributed these challenges mainly to differences in personalities and/or working styles. Three additional issues, which map broadly to the double-headed arrows in figure 1, were prominent themes in our interviews and documentary data (e.g., letters, emails): (1) differences in how these stakeholders perceived the health need; (2) differences in what they thought was being delivered in the program and how it linked with the health need; and (3) conflicts in stakeholder values and the micropolitics of their involvement with the program (in particular, what each stood to gain or lose).

All the stakeholders in the stroke program agreed on the need for rapid, evidence-based care (such as brain scanning and thrombolysis) in acute stroke followed by intensive rehabilitation. Coordination between acute and community services, prompt handovers, and seamless transfer of care were uncontested principles of good care. But stakeholders did not agree, either at the time of the funded program or in retrospect, on how this challenge should be addressed. Some dissenters considered that high-quality evidence had already been available in the form of research findings and that this could have been identified and put directly into practice.

The MI [modernization initiative stroke] team were not aware of the existing evidence and so chose to use a non-evidence-based model or to try and create their own model. (Senior doctor, source code withheld)

In contrast, those who viewed the modernization initiative positively highlighted the regular “sharing the learning” events (informal, facilitated discussions about what was happening) that had linked acute and community staff; they also emphasized the value of local audits and surveys. Several, for example, commented that in the early stages of the program, analysis had revealed the “fact” (presumably derived from a local audit) that speech therapists spent only 12 percent of their time in patient-facing activities. This was recalled as having led more or less directly to the redistribution of staff workload toward more patient-facing activity, without the need to seek any external (research) evidence or benchmark.

Most stakeholders in the stroke program depicted quality improvement and service transformation as requiring personal moral commitment and having been achieved at least partly via “soft” activities such as relationship building and facilitated team discussion, and they had sought to continue this after the funding period ended. Dissenters, in contrast, portrayed the quality improvement process in technical and managerial terms as “models” to be “implemented.” They saw the infrastructure needed for change as structural, procedural, and readily transferable.

What the Charity should fund is an infrastructure generically to modernize any service that comes along with an idea. (Senior stroke doctor, source code withheld)

The different knowledge claims in the stroke program are worth examining. The schism between proponents and dissenters appeared to reflect a fundamental difference in how different kinds of knowledge (e.g., evidence from randomized controlled trials compared with the personally embodied and collectively generated knowledge of frontline staff) were valued. The program manager and many community staff were experienced NHS employees whose main strengths were their extensive experience and contacts and their intuitive knowledge of local ways of working. Dissenters included three senior staff on academic contracts who sat on national steering groups for evidence-based practice in stroke care. Their units attracted considerable research income for randomized trials, cohort studies, and qualitative studies of users’ experiences, all of which were oriented to producing generalizable lessons for a predominantly academic audience.

All this made for what Bisset and Potvin called an “unstable actor-network” (Bisset and Potvin 2007). Not only were there major differences in interests and values, but there also were (at least in the perception of some of the people we interviewed) differences in these stakeholders’ access to data and their power to mobilize resources. Although the stroke program made many enduring changes (table 2), we cautiously concluded that the network’s instability may be limiting the capacity for ongoing, whole-system change in this complex service area.

Another example of an unstable network for sustainability is in parts of the sexual health program. In its early days (2003/2004), the diverse stakeholders in its project management group struggled to agree on the key health concerns. Some hospital consultants (who, as it turned out, became the minority dissenters in this program) articulated the problem as a disease model. They sought a conventional “referral pyramid,” with general practitioners and nurses dealing with “mild cases” and referring “complex cases” to secondary care, all supported by a common guideline, and they considered “family planning” to be a different specialty.

In contrast, community staff and many third-sector groups viewed the problem very differently, in what they called “holistic” terms. They rejected the term “genito-urinary medicine” as not holistic and took the position that “sexual health services” (addressing illness, risk behavior, and contraception) should be offered by a single care provider in a way that minimized the number of contacts the patient needed to make with the health care system. They emphasized, from a critical and feminist perspective, that women seeking sexual health services may be in coercive relationships and/or socially excluded. They felt that “rebranding” (i.e., de-stigmatization) the service and reducing waiting times were essential to increasing its accessibility to vulnerable groups such as teenagers and minorities. They saw self-management of acute sexual health problems as a vehicle for encouraging vulnerable groups to attend clinics in the knowledge that they would not be questioned or examined by clinicians in white coats.

Between 2004 and 2008, the sexual health program radically restructured its services, introduced new staff roles (such as health care assistants in a “meeting and greeting” role), developed new “holistic” training and qualifications (covering family planning and sexually transmitted infections), trained and offered incentives to general practitioners and pharmacists to test for sexually transmitted infections, and invested heavily in the redesign of community sexual health clinics.

TABLE 2
What Was Sustained in the Modernization Initiative? Summary of Findings from the Intervention-Focused Component of the Analysis

Aspect of Sustainability	Stroke Project	Kidney Project	Sexual Health Project
1. Sustained benefits for patients	Length of stay for acute stroke is low and falling compared with national average. Time to first community visit on stroke discharge is among shortest in the country.	Live kidney donor rates are the highest in the country and rising steadily. Most patients who wish to be self-caring on dialysis are now supported to do this. Patients with end-stage failure choosing not to dialyze have the option of end-of-life care.	Clinic waiting times remain low, taking account of popularity of new service. Rising percentage of visits in which patients are seen by a single clinician. Teenage pregnancy rates remain low. Patients' satisfaction with service is high.
2. Sustained program components and activities	Streamlined patient pathways. Early diagnosis campaign involving general public and ambulance staff. Rapid-access TIA clinic, scanning, and thrombolysis (with telemedicine link). Early supported discharge and community rehabilitation following stroke.	Streamlined patient pathways. Personalized care package for each patient that matches services to need. Wide choice of dialysis options, including nocturnal and home hemodialysis. Self-management on hemodialysis units.	Streamlined patient pathways, including "one-stop shop" sexual health service. Increased system capacity in the same financial envelope. Redesigned financial flows with pooled budget across primary and secondary care.

Continued

TABLE 2—Continued

Aspect of Sustainability	Stroke Project	Kidney Project	Sexual Health Project
3. Sustained practices and procedures	Systematic, competency-based training for all levels of staff (simplified from original version). “Patients as teachers” initiative. Educational DVDs and patient packs.	Continuing presence of patients and care givers on steering groups effecting real changes. Culture of patient-centeredness pervades many aspects of the service.	Continuing involvement of GPs and community pharmacists in delivery of sexual health services. “Mystery shopper” evaluation by patients.
4. Sustained capacity to undertake quality improvement work	Persistent culture of quality improvement. Ongoing use of tools and techniques, e.g., demand and capacity analysis. Joint working between secondary and community staff to deliver integrated care.	Persistent culture of quality improvement. Ongoing use of tools and techniques, e.g., demand and capacity analysis. Activity modeling across southeast London.	Persistent culture of quality improvement. Ongoing use of tools and techniques, e.g., demand and capacity analysis. Financial and activity modeling.

Continued

TABLE 2—Continued

Aspect of Sustainability	Stroke Project	Kidney Project	Sexual Health Project
5. Sustained interorganizational partnerships	Continuing link between acute and community sectors with “in-reach” service. Continuing link with third-sector service. Health care for London has adopted approaches and models from this program. Financial modeling for stroke early supported discharge used by National Audit Office. Staff members advising on national stroke policy and consultancy to other boroughs.	Developing links between primary and secondary care clinicians and staff. Patient-centered change model used as basis of local diabetes modernization. “Empowerment on dialysis” ethos has spread to neighboring dialysis units. Peer support for kidney units recommended as national policy by national kidney czar.	Sexual health network continues under mainstream funding, involving primary, secondary, and third-sector providers. Delivery of one integrated model of care. Ideas and techniques transferred to new sites as staff were relocated. Extension of “one-stop shop” model to neighboring clinics and replication of this model in other sites in UK. Financial modeling countrywide.

Source: Other aspects of sustainability were synthesized from Øvreveit 2011; and Scheirer and Dearing 2011.

Follow-up data (available from the authors) demonstrated that the re-branded (and considerably more streamlined) service had indeed proved popular with younger people and that various metrics of success were positive. However, the self-management options were seldom used by the mostly teenaged clientele, whose health literacy appeared to be low and whom staff described as “vulnerable.”

These findings can be interpreted as network instability characterized by fundamental differences in the principal stakeholders’ interests, values, and knowledge claims. At the time of the original modernization initiative, one group (this time, the community-based team) had been able to exert power over rival groups in defining the health need and mobilizing resources. But despite impressive short-term progress and popular new service models, the long-term sustainability of the innovative approach introduced in 2004–2008 appeared by no means secure. As one interviewee put it: “You can’t expect people to help design a system that will do them out of a job” (Community clinician, 46).

In both these examples, the network’s instability regarding the “transformed” service may have been exacerbated by limited data on major aspects of performance. The absence of a fixed denominator (because of a mobile population and rapidly changing patterns of health need over time), the lack of granularity (i.e., performance of subunits could not be teased out from a wider picture), and missing information (because the staff charged with collecting it or ensuring its quality were not available) meant that the meaning and significance of particular measures and metrics remained contested both during and after the funding period.

A significant contributor to the network’s instability was the ambiguous position of the commissioners and the commissioning process. The publicly funded NHS at the time of the original modernization initiative had recently begun to introduce the formal commissioning of care to the purchasers (primary care trusts) and the providers (hospital trusts, general practices, and community services). Because of its external funding, the modernization initiative was not linked directly to this commissioning process. Instead, it had a somewhat “offshore” status in which much creative work to develop new service models was made possible. The funder’s original vision was that the commissioners of care would later adopt those models that were shown to be more efficient, effective, and appropriate than the current practice. This framing implied that “service models” were readily separable from the context of their

development and could be unproblematically mainstreamed in future commissioning rounds. Interviewees who had worked for the modernization initiative recalled that work with the commissioners had begun at a relatively early stage to set such a chain of events in motion.

But the commissioners themselves did not share this framing; indeed, they viewed it as somewhat naïve. Services, they said, had been wrongly treated as a “package” that could be “picked up” by providers. They felt that there had been an overemphasis on “change management” at the expense of building in the (sometimes complex) financial levers and incentives to ensure that the models would make local business sense. A service model that is deemed in general terms to be “cost-effective” may or may not generate real savings in a particular commissioning context. They felt that changes would have been more sustainable had the commissioners been more actively involved right from the planning stage, because commissioning is a highly skilled and embedded process that has to be designed alongside the new service models.

The embeddedness of service models—specifically, their intricate dependence on particular framings of the health need, particular relationships and ways of working, and particular service agreements and financial flows—explains why the local spread of these models was sometimes problematic. For example, a peer support program led by a patient charity that had been worked up and refined in one borough ran into problems when efforts were made to extend it to an adjacent borough:

Working in [borough X] was particularly difficult, and I feel it never really succeeded. I had no contacts within the borough and so had to develop all the relationships afresh. I hadn't worked with the purchasers before, and relationships with the PCT [primary care trust] are still nonexistent. I hadn't anticipated how difficult it would be to work across the two boroughs. (Staff member of patient charity, 18)

Note that the speaker emphasizes the impossibility of introducing a cross-sector service model in the absence of warm relationships and a history of working together. In contrast, successful spread of service models to distant settings was sometimes achieved by teams that already had close interorganizational relationships and a history of working together.

In sum, the system-dynamic analysis of this complex data set revealed a number of interacting processes, which should be thought of as

occurring in a complex system. Changes in external context; in the way participants made sense of their individual and collective activities (including how they interpreted different health concerns and the extent to which they valued and trusted particular approaches or performance data); in the practicalities of delivering and monitoring the program's components and adapting them to changing patterns of need; in the nature and extent of stakeholders' engagement; and in the distribution of power and resources between them all helped explain the variable sustainability of different aspects of the modernization legacy.

Discussion

We have described a three-year follow-up of a large modernization initiative and explored its sustainability from both intervention-focused and system-dynamic perspectives. Some of, but not all, the services introduced during the funded transformation period survived. A culture of quality improvement and patient-centeredness remained, and innovative ideas and practices had spread. The complexity of the program and the multiple intervening influences meant that links between the original program of transformational change and particular activities or patients' outcomes were highly nonlinear. They could be explained as interacting processes and the extent of reciprocal adaptation and embedding, but not as predictable and generalizable relationships between variables.

The study has three main strengths. First, the rare opportunity to return to a site of previous in-depth research and undertake a detailed follow-up enabled us to add to a very sparse literature on the sustainability of service transformation in health care. Second, the mixed-method case study design, combined with a novel dual analytic framework, allowed us to address both intervention-focused questions (what has been sustained?) and system-dynamic questions (how and why did things unfold as they did?) and produce a detailed account of this very complex case. Third, although we drew explicitly on models developed by other researchers, we also added significantly to the theory and methods in this contested field. In particular, we showed that the *combination* of intervention-focused approaches (which, arguably, assume a closed system) and system-dynamic approaches (which assume an open system), each applied judiciously, produces more than the sum of the parts.

The main limitation is that unlike the original evaluation, in which we had extensive access to all parts of the field site for a period of four years, our data set this time was mostly retrospective, and much of it was indirect (e.g., in the form of reports). We also had limited access to some aspects of patients' experiences (e.g., it proved unworkable to administer questionnaires to stroke or sexual health patients). One or two dissenters were reluctant to be interviewed directly, and we had no say in which data were collected before we were commissioned. However, there is no such thing as a perfect data set in organizational case study, and we consider that the available sources allowed us to produce a sufficiently rich and dynamic picture to support our conclusions.

This study has a number of implications for those seeking to deliver and sustain transformational change. First, for a whole-system change effort taking place at a time of high environmental turbulence, rapidly changing patterns of need, a complex and changing service infrastructure, and multiple external policy initiatives, all of which militate against the long-term continuation or relevance of any particular set of activities, the question of what has been sustained as originally intended must be supplemented by the question of how have things moved on, and why.

Second, those embarking on large-scale transformational change efforts would be advised to incorporate a systems approach from the outset. Even though the various stakeholders referred to the modernization initiative as a "whole system change program," hindsight suggests that some of its design features were at odds with a system approach. In particular, the "offshore" nature of the modernization initiative, which made it easier to introduce and test new service models across organizations and sectors, also made it more difficult to embed those models in the NHS's business as usual. Linking the transformation effort more closely to the mainstream-commissioning and business-planning infrastructure may mean slower initial progress but may ultimately prove more enduring.

Third, our findings suggest that the knowledge needed to sustain complex service innovations spanning multiple organizations and sectors appears to be largely tied to individuals, embedded in relationships, and strongly value laden. When key individuals remain in the health economy (even if their roles and job titles change) and interpersonal relationships remain "warm," the informal wheels are oiled for further improvement and adaptation, because, for example, a shared sense of

priorities, needs, and potential solutions is continually being negotiated. In such circumstances, new governance arrangements and business plans that cut across organizational and sectoral boundaries can often be initiated or reassembled relatively swiftly when the need arises.

Fourth, this study suggests that only few insights into the potential or progress of a study will be gained by studying its “hard” components (success metrics, commissioning plans, contracts, governance arrangements, and so on) in isolation from the historical, economic, sociocultural, and interpersonal influences that gave rise to them and within which they acquire local meaning and significance. Although many of these components are crucial to the sustainability of transformation efforts (and, more important, to the capacity to maintain such efforts), it may be difficult or impossible to introduce such elements unless they are negotiated and renegotiated in real time as the program takes shape. For this reason, the appealing notion of “transferable models” and a “generic infrastructure for implementation” is likely to remain elusive.

Fifth, when considering how to go beyond logic models in order to capture the dynamic unfolding of a program over time, three questions might guide data collection and analysis: (1) How do stakeholders define the health concern, and what are the key points of consensus and contestation among them? (2) To what extent do the program’s components and infrastructure remain aligned to the priority health concerns in a tight quality cycle (i.e., with objective setting, systematic data collection, timely feedback of findings, and action in response to these findings)? and (3) Whose interests are served by different components of the program, and how are the micropolitics of resource allocation and responsibilities playing out?

Our empirical findings support and extend those of two recent overviews (Øvretveit 2011; Scheirer and Dearing 2011). A consistent message is that although intervention-focused analyses have an important place (indeed, small-scale quality improvement initiatives are often best addressed with tightly focused research questions expressed as simple links between independent and dependent variables), large-scale transformation initiatives in the real world require more complex approaches to draw out the story of how multiple interacting processes generate particular outcomes over time (Bisset and Potvin 2007; Johnson et al. 2004; Rogers et al. 2007; Scheirer, Hartling, and Hagerman 2008). Empirical studies of these dynamic interactions have begun to appear (Bisset and Potvin 2007; Buchanan et al. 2005; Pluye,

Potvin, and Denis 2004; Pluye et al. 2005; Van de Ven et al. 1999). We recommend further mixed-method studies, with a prospective longitudinal design, to build on this emerging evidence base.

The novel analytic framework we introduced in this article was developed after completion of the data collection; it emerged alongside and informed the data analysis. We anticipate (though we cannot confirm) that it is likely also to add value when used prospectively. Specifically, policymakers and program architects who embark on complex change efforts will, at any point in the unfolding of the program (and perhaps also after the funding period has ended), be implementing and/or seeking to sustain a particular set of activities oriented to producing a particular set of outcomes. To that end, they should undertake (or commission) an intervention-focused evaluation based on a set of hypothesis-driven questions and (largely) predefined metrics. However, the program will inevitably encounter unforeseen factors and events, which, at least in the eyes of some stakeholders, will necessitate changes to the protocol “on the fly.” These changes, and their ramifications, demand rich processual explanations, for which a system-dynamic evaluation is needed.

We cannot stipulate in advance what the “correct” balance between these two approaches should be in any particular program, and we certainly cannot set any generic rules about assessing this balance. But we believe it should be possible to set up a change program and linked evaluation in a way that anticipates and accommodates the flexible use and juxtaposition of both intervention-focused and system-dynamic evaluation components. It may also be possible to draw explicitly on the contrasting assumptions about reality that underpin these different approaches in order to help make sense of the program in real time and to guide decisions about what (additional) data to collect and how best to analyze and present them. One unanswered question is whether and to what extent making the system-dynamic perspective explicit among staff and other stakeholders (including funders) would help the sense-making process and aid efforts to embed and sustain the changes.

The findings of this empirical study have some resonance with those of a secondary research study in the same issue of this journal (Best et al. 2012). These authors combined a realist analytic lens with a complex adaptive systems orientation to develop “simple rules” to inform and explain large-scale transformation programs, though they did not specifically study the long-term sustainability of such programs. Both our own study and that of Best and his colleagues have highlighted, using

different theoretical lenses, the embeddedness and historical contingency of large-system change and the critical contribution of “engaged” human agents in building and maintaining that change.

One final point. Even though whole-system transformation efforts are gaining in popularity, many policymakers, clinicians, researchers, reviewers, and journal editors will be unfamiliar with the assumptions and methods of the system-dynamic approach, and some may find them difficult. Yet our findings suggest that successful whole-system transformation programs, and the evaluation of such programs, depends on achieving widespread confidence and capability to go beyond logic models and apply a system-dynamic approach where appropriate. There is a parallel here to the early years of evidence-based medicine, when efforts to build the evidence base (randomized trials, meta-analyses, and so on) emerged along with the provision of educational programs, “training the trainers” courses, and explanatory articles in the medical journals. We strongly recommend a similar effort to build the empirical knowledge base for system-level change alongside the capacity and capability of stakeholders to engage critically with, and apply, this knowledge base.

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This study was deemed "service evaluation" and hence beyond its scope by the local NHS Research Ethics Committee. Ethical and governance issues were overseen by an intersectoral steering group chaired by a service user who had been actively involved in the original modernization initiative. A core research group met weekly.

Fraser Macfarlane and Trisha Greenhalgh conceptualized the study. Fran Woodard facilitated contacts with participants, and Fraser Macfarlane, Catherine Barton-Sweeney, and Trisha Greenhalgh collected the data. Fatima Atif and David Hill administered the questionnaire to the patients. Fraser Macfarlane, Trisha Greenhalgh, and Fran Woodard analyzed the data and wrote the article. Catherine Barton-Sweeney contacted all the research participants so that we could check our interpretations, and she checked the final manuscript. Trisha Greenhalgh is the guarantor for the article.