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Opening up conversations: Collaborative working across sociomaterial contexts in nursing in London

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Abstract

Aim: To discuss nurses' use of networks to address nursing recruitment and retention in London, UK.

Design: Qualitative evaluation of the Capital Nurse programme reporting on 30 narrative interviews with executive, clinical and student nurses in 2019.

Results: Executive nurses within the Capital Nurse programme recognized the importance of sociomaterial contexts in the health and social care system in London and worked strategically across these contexts to achieve change. Supported through the Capital Nurse programme, executive nurses from health organizations across London initiated collaborative working to improve recruitment and retention. Primarily by designing and delivering sociomaterial products (organizational and educational) to support nurses to build a career in London. Drawing on ideas from actor network theory, in particular sociomaterial contexts, nurses' actions at all levels to develop and sustain networks to address nursing recruitment and retention across the NHS in London are described.

Conclusions: Capital Nurse supported collaborative working both within single organizations and across organizations in London. There is evidence of change in how nurses across the capital work together to improve patient care, improve recruitment and retention. Findings may resonate with nurses in other settings who seek to address the problem of recruitment and retention. They show how nurses coming together in networks to effect changes in practice can work successfully.

Impact: Nurses' use of networks led to novel models of communication and action to address the problems of recruitment and retention in London. We argue that sociomateriality should be considered outside the clinical practice setting, as part of nurses' professional development and organizational practice, that is how they plan their career, how they address recruitment and retention, how they communicate across organizations about nursing issues.

No Patient or Public Contribution: This was an evaluation of a staff development project in London, which sought to elicit nurses' experiences of participation in Capital Nurse.

KEYWORDS
actor network theory, nursing, recruitment, retention, sociomateriality

1 | INTRODUCTION

Health Education England (HEE) is an executive non-departmental public body of the Department of Health and Social Care in the United Kingdom. Its function is to provide national leadership and coordination for education and training within the health and public health workforce in England. In 2016 HEE brought together executive nurses (responsible for strategic workforce planning as board members in NHS organizations) and senior nurses (responsible for operational planning within single NHS organizations) and external partners across London's health and social care system under the umbrella organization funded by HEE, Capital Nurse. Their task was to address two challenges to developing and sustaining a skilled nursing workforce in the capital: (i) the recruitment of student nurses, their retention on education programmes and on qualifying; (ii) the retention and upskilling of existing registered nurses particularly those in mid-career. Partners in Capital Nurse included NHS Trusts (local organizations delivering health care to local populations), universities, local government councils, other health and social care providers in London.

In this paper, we draw on findings from an evaluation of Capital Nurse to discuss how executive nurses built and sustained collaborative ways of working in new, nurse-led networks across boundaries and organizations which resulted in novel, collective action to address recruitment and retention. We discuss the importance of sociomaterial contexts in shaping and constraining action. We highlight these collective actions in the findings and the ways in which nurses at different stages of their careers and in different settings, worked as individuals and in teams, to promote professional agendas, nursing leadership and nursing career pathways.

1.1 | Background

Nurses and midwives are the single largest professional group of health care professionals. The pandemic increased pressures on recruitment and retention (International Council of Nurses, 2022). Globally, a failure to recruit and retain nurses remains a significant risk in the aftermath of the COVID pandemic to improving people's health (Nebehay, 2021). In the United Kingdom, a pay cap on public sector pay (Royal College of Nursing, 2019), continued attrition of nurses of retiring age, students and newly qualified nurses (Sutcliffe, 2021), the withdrawal of the NHS bursary for nursing students in 2017, alongside restrictive immigration policies (Reynolds, 2019) have deepened the workforce crisis. Capital Nurse in London was a response to recruitment and retention problems in London only.

TABLE 1 Capital Nurse projects 2018–2022

a. Career clinics: enabling internal transfers between specialist areas.
b. Skills Passport: designing and delivering a registered nurse''s (RN) skills passport to make it easier for RNs to build a career in the capital by moving between health organizations to gain experience prior to promotion. An intravenous (IV) therapy passport which means RNs can move between organizations in London without repeating IV training.
c. Cross-boundary specialist practice: promoting cross boundary working between acute hospitals, across sectors for example, care home/hospitals and within specialisms; designing and delivering training across sectors for example, leadership training which staff employed in health care organizations outside the NHS can access with NHS staff.
d. Capital Nurse preceptorship programme: a London wide Preceptorship training programme which means registered nurses can move between organizations, again without retraining as a preceptor.
e. Capital Nurse Leadership training: facilitating leadership development among clinical nurses to build future leaders.
f. Student employment offers: a specific employment offer for 3rd-year students who then have certainty over their employment as registered nurses. Facilitating the participation of student ambassadors in leadership training and Capital Nurse events to encourage retention.
g. Capital Nurse events: London wide events which showcase the work of Capital Nurse and the potential for collaborative working across specialisms, organizations and sectors; students volunteer to become student ambassadors and join in discussions about current issues relevant to nursing in London at these events.

Over 90 educational and/or organizational projects were coordinated and supported by Capital Nurse across London with new projects starting up to the Pandemic in 2020 (see https://www.hee.nhs.uk/our-work/Capital.Nurse) (see Table 1). Many of these such as the London-wide Preceptorship programme and skills passports continue to date.

2 | THE STUDY

2.1 | Aim

The aim of the evaluation was to explore the impact of Capital Nurse for stakeholders. The study objectives were to:

- Describe the impact of leadership development work on stakeholders' practice
- Describe stakeholders' views on the impact of Capital Nurse
- Describe stakeholders' views on the impact of the Capital Nurse model of collaborative large system change, and how this might

be implemented and sustained locally, in sustainability and transformation partnerships (STPs) and pan-London

2.2 | Design and methods

A qualitative evaluation interview methodology was used (Clandinin & Connelly, 2000) in two stages of data collection in Spring/Summer 2019.

2.2.1 | Setting, sampling and recruitment

We used maximum variation, purposive sampling in two stages to reflect the size and geographic spread of trusts across the capital involved in Capital Nurse, the number of stakeholders involved and their positions within the London system of health and social care including universities. In stage 1, 30 Capital Nurse Board members, Directors of Nursing, Directors of Workforce and Educational Leads from selected NHS trusts across London and directors of the work stream reference groups were approached directly via email by the lead of the Capital Nurse Evaluation Steering Group with an information sheet and asked to respond directly to the research team if they wished to participate. Twenty participants agreed to a narrative interview (see Table 2) and gave signed consent. In stage 2, following early data analysis of stage 1 data, Capital Nurse area leads were contacted and asked to email an invitation to clinical nurses and other healthcare professionals (HCPs) including nursing students and care home managers who had participated in Capital Nurse training courses. Three student nurses, four nurse educators and three care home managers volunteered for an interview (see Table 3). All gave their signed consent.

TABLE 2 Participants stage 1

Role/organization type	Mode
Senior operating officer (Board)	Telephone interview
Joint CN Board/Greater London Government	Video interview
Director of Nursing (DoN) Hospital Acute	Video interview
Royal College of Nursing Policy Advisor	Video interview
DoN Specialist Hospital	In person interview
DoN Acute Hospital	Video interview
Academic seconded to CN	Video interview
NHS Executive Board member (nin-nurse)	Video interview
CN Board member (non-nurse)	In person interview
Workforce Lead Acute Hospital	Video interview
DoN Acute Hospital	Video interview
CN Board member	Video interview
CN Board member	In person interview
DoN Acute Hospital	In person interview
DoN Mental Health Hospital	In person interview
DoN Acute Hospital	In person interview
DoN Acute Hospital	Telephone interview
CN Board member	Telephone interview
DoN Mental Health Hospital	Video interview
HR Lead Acute Hospital	Video interview
Total	20

2.2.2 | Data collection

Thirty narrative interviews captured stakeholders' stories of their involvement with Capital Nurse their experiences of Capital Nurse, what it meant for them, and their understanding of the impact Capital Nurse has had to date on nurse recruitment and retention in London. Interviews were conducted by telephone, video or in person according to participants" availability and preference. According to participants' schedules and to gain a range of views from multiple stakeholders in in ways which were as facilitative as possible for participants, the interviews were arranged as individual, joint and focus group interviews and lasted on average 45 min. This allowed us to explore both individual narratives in individual interviews and the dynamics between narrators which focus group and joint interviews allow.

2.2.3 | Data analysis and rigour

Interview data were transcribed verbatim. Data were coded using thematic analysis paying attention to temporal plotlines, settings and social relationships (Clandinin & Connelly, 2000) by the first author. After discussion with co-authors about emerging analytic ideas in light of sociomateriality and actor network (ANT) theory, a further level of analysis was then undertaken which we present in this paper. Following Demant and Ravn (2020) who argue that a focus on connections between humans and non-human entities and sociomateriality is possible in qualitative interviews in ANT studies, we felt this approach was justified. Emergent themes were identified for the whole interview set. A consensus on themes across all narratives to strengthen the analysis, rigour and confirmability of the findings was agreed between the authors.

2.2.4 | Ethical review

Following ethical review from the Health Research Ethics Committee, Middlesex University (Ref. no. 7728). All participants were provided with a participant information sheet and gave voluntary consent prior to data collection. The participants agreed to maintain confidentiality regarding the discussions. No identifying details were included in the transcription of the data.

TABLE 3 Participants stage 2

Role/type of organization/geography	Mode	Total participants
Newly qualified nurses/student Ambassadors	1 Individual video interview; 1 joint interview.	3
Home care managers	1 Focus group interview × 3 participants	3
Nurse practice educators	Individual video × 1; 1 focus group face-to-face × 3 participants	4

2.3 | Theoretical framework

We use sociomateriality as a theoretical framework to explore the relationships and roles of actors and networks developed in nursing in London as a result of Capital Nurse activities. Sociomateriality describes a range of perspectives that view human and material entities as inseparable; approaches using sociomateriality aim to make visible materials we take for granted in everyday life, for example, objects, spaces, technologies (Latimer, 2018) and privilege understandings of how materials shape humans' actions and interactions (Rees et al., 2021). Human and non-human materials continuously interact and influence each other in networks which are themselves produced and reproduced through socimateriality (Orlikowski & Scott, 2008).

Sociomateriality foregrounds the interplay of human, technical and contextual actors within networked sociomaterial contexts, including complex practice environments where nurses and health technologies and other nonhuman entities interact (Booth et al., 2016; Lapum et al., 2012; Rioux-Dubois & Perron, 2016). Actor network theory (ANT) assumes that human and non-human actors exist and interact within networked sociomaterial contexts. These include complex practice environments where human (nurse, clinical manager, executive nurse, health care assistant, social care worker) and nonhuman actors (in the nursing context, these would be computers, uniforms, pencil, technical equipment, training courses, digital and non-digital communication systems) interact within the context of their sociomaterial networks (health organizations, clinical specialisms) (Latimer8).

Early ANT studies were primarily concerned with new forms of technologies, particularly information technologies, in organizations and how these might change human relationships with human and nonhuman actors. Later ANT studies broadened what might be understood as technologies in organizational and professional life, to include systems, methods of organization and techniques that may be called cultural forces enabled through technologies. Understanding technologies as sociomaterial allows the exploration of relationships between organizational characteristics including structure, size, culture, learning and inter-organizational relations, and organizational efficiency and innovation. Law (2009, p. 141) explains material reality this way:

> [ANT is a] method of analysis which treats everything in the social and natural worlds as a continuously generated effect of the webs of relations within which they are located. [ANT] assumes that nothing has reality or form outside the enactment of those relations. Its studies explore and characterise the webs and the practices that carry them.

In actor network theory, networks are the sum of relationships between actors because the theory assumes a relational ontology where social structures as such are not thought to exist outside of relations between actors. Actors' relations, their actions and the networks they form are continuously *remade* (Rioux-Dubois & Perron, 2016) and any resulting, relational social structures are brought into being through associations or human actions (Demant & Ravn, 2020). ANT has been criticized for insufficient attention to social constructs such as race and gender which exist outside of social relations as social structures (Steen et al., 2006). However, as Elder-Vass (2008) argues, ANT pushes us to be aware of how social structures such as ethnicity and gender are constructed through relations between humans and human-nonhumans.

Applied to nursing, ANT illuminates the ordinary and mundane materialities of care or the everyday nature of nursing actions which are often invisible, neglected or even, immaterial (Latimer, 2018). In this paper we focus on the immateriality of technologies used by nurses in professional networks (their communications, their professional identities, their career aspirations) rather than the technologies they use in delivering care. As Orlikowski and Scott (2008) emphasize, ANT makes it clear that humans (in this paper, nurses) do not just interact with technologies, they exist as assemblages with them, in relation to them and are thus inseparable (Lapum et al., 2012). Assemblages are a '*complex tangle of natural, technological, human and non-human elements that come together to accomplish both intended and unintended outcomes* (MacLeod et al., 2019, p. 179). We argue here that sociomaterial assemblages include networks and teams in which nurses work which may be understood as immaterial, human–technology relationships within complex healthcare environments (Van Gemert-Pijnen et al., 2011). And that nurses' use of technologies (including the immaterial) is a dynamic relationship where agentic individual nurses use and thus modify the role of health technologies in care (Gough et al., 2014). Networks are possible when individual nurses come together to work collectively to identify shared interests and mobilize to affect change through shared, collective action or affordances (MacLeod et al., 2019). Stakeholder actions may also be directed to overcoming constraints to support their initiatives within networks. As Demant and Ravn (2020, p. 4) argue, *'any actor is both active and enacted by other*

actors because its capacities are established, limited or otherwise mediated by its network (Latour, 2005; Law, 2009; Mol, 2010)'. We stress in this article that the materiality of artefacts plays an important role in constructing inscription or meaning to action and relationships.

3 | FINDINGS

3.1 | Study participants

All stakeholders in stage 1 worked as either executive or senior nurses and many had been involved with Capital Nurse for some time (see Table 2). In their view, Capital Nurse successfully facilitated new collaborations within single NHS organizations and between local NHS organizations across the capital. Novel programmes of training were developed and delivered which brought together participants from across sectors (care home/NHS interface; between hospitals) and within specialisms (care home manager leadership training; urgent and emergency care; practice nurse education) (see Table 1). Collaborations were established between nurses working in senior management posts and between those working at clinical level, including student nurses. Stakeholders in stage 1 observed that this collaborative way of working facilitated leadership development across their NHS organization to build the future leaders and retain student and newly qualified nurses and nurses in mid-career. Stakeholders in stage 2 (see Table 3) emphasized how Capital Nurse support had allowed them to effect personal change. Students and junior nurses working clinically emphasized the difference the support from Capital Nurse had had on their ability to work across organizations with nurses in the same field or with nurses in a different hospital working at the same employment level. Care home managers stressed how a Capital Nurse training course had opened up collaboration across the care home/NHS interface to improve patient care. Nurse educators described the value of Capital Nurse training for inexperienced nurses keen to develop careers in nursing.

We present our findings as three themes: (1) the formation of sociomaterial assemblages in new nurse networks; (2) affordances or the possibilities of stakeholder, collaborative actions across organizations; (3) inscribed meaning in the Capital Nurse programme.

3.2 | Sociomaterial assemblages

Key sociomaterial assemblages described by the stakeholders were the Capital Nurse events and training courses; these assemblages illustrate the entanglement of social and material organizational life. Stakeholders described these assemblages by the powerful and often repeated, the '*Capital Nurse way of working*'. By this they meant that Capital Nurse encouraged them to work with nurses outside their organization, or their specialism; work across sectors (for example, share training with care home managers or become a student ambassador and attend Capital Nurse events). They emphasized that working collaboratively was new and that it offered potential for change, either personally in addressing their individual concerns with career progression (studying for a skills passport perhaps) or more generally, working as a specialist group of clinical managers and practice educators across hospitals to attract newly qualified nurses to work in emergency care. Drawing on Latimer (2018), we argue that these seemingly immaterial events, networks, training courses and collective ways of working are novel systems, technologies, methods of organization and techniques or cultural forces enabled through sociomateriality.

Capital Nurse (CN) was experienced as a collaborative way of working which facilitated nurses at all levels of the NHS to cross organizational boundaries. Participants described feeling able to work in a new way across health and local government, across NHS organizations, across regions in London and across the NHS and care home sector. The Capital Nurse way of working was cited by two community nurses we interviewed in Stage 2 (one a care home manager, one a practice educator) in the form of the badges they had received after attending a Capital Nurse training course. These badges were clearly meaningful artefacts for them which illustrate both the sociomateriality possible through engagement in Capital Nurse collective or collaborative actions, and the inscription of meaning to action (participation in the programme).

> We're Capital Nurses! I wear my CN badge because I'm proud of what we've done!
>
> (Care home manager)

> I wear my badge. It's given me an identity … it's what's kept me in nursing.
>
> (Primary Care practice educator)

Networks of nurses were established between senior nursing managers and junior clinical nurses in a specialist field (emergency care, intensive care), between staff providing care pathways across hospital and community (for the elderly, in emergency and oncology care), between nursing departments in universities and NHS organizations, NHS organizations and HEE. These new forms of collaboration in new networks resulted in new forms of communication and action:

> The powerful thing for me about it was that there was this strategic level connection—probably at my level and at Chief Nurse level, but what we were doing which was even more powerful, was allowing people at a slightly more junior level than me, doing a lot of work with Capital Nurse, which gave them all new connections.
>
> (CN Board Member)

A student nurse argued that Capital Nurse gave her a voice:

> The whole retention and like things that are quite relevant within the NHS right now. So, there's like issues, it gave us a chance to kind of voice these opinions and

> like get feedback on what other people were saying as well.
>
> (Student nurse)

In the following quote two student nurses describe their emerging awareness of Capital Nurse's shared vision and the possibilities this offers them now and in their future career. The entanglement of their social and material organizational lives are vividly described in the following quote:

> ***Student 1:*** a lot of the things I learned from Capital Nurse I could go back and feed it back to my peers in my class and they really liked it. They really, a lot of them didn't know about Capital Nurse and I started speaking about the schemes and the leadership stuff that they do and everyone was really interested. So think it's just bringing that awareness to everyone that there is so much.
>
> ***Student 2:*** I suppose if you get into it [leadership] as a student and you're taking an active role in leadership and getting your voice and concerns heard, it's a lot easier to continue it at staff [nurse] level

New ways of communication led to action based around new networks which helped nurses to understand and address the challenges of working across London:

> We can move quickly as we have a dedicated resource for clinical strands of work which matter to our chief nurses … and nurses themselves. It's not magic but we can take up the issues which matter … and use the trust in Capital Nurse in the sector to deliver different approaches and models of working together
>
> (CN Executive Nurse)

As we have set out above, organizational life encompasses cultural forces (agency, collective action) which are enabled through technologies. These new forms of collaborative working described by participants in Capital Nurse such as working across sectors and developing networks, offer the possibility of looking afresh at organizational systems as organic entities which evolve and change through collective action. In a sociomaterial view of organizations and technologies in organizations, organizational learning and inter-organizational relations become new technologies which allow network action. As this stage 2 participant describes:

> So, Capital Nurse is actually strengthening the relationships with … not only in care sector, it's with NHS and it's across boroughs
>
> (Care home manager)

We understand these novel conversations as illustrative of relationships between human and non-human actors in newly formed sociomaterial networks where materiality and immaterial become entangled in the social. In this quote the immaterial (£ signs) is used to powerfully convey human and non-human relations:

> Networks don't have money [but] CN can turn conversations across sectors into £ signs, test models of working.
>
> (CN Executive Nurse)

What does the phrase '*CN can turn conversations across sectors into £ signs' mean*? The implication is that money helps get things done and Capital Nurse helps networks to act or '*test models of working*'. This statement suggests that this executive nurse understands Capital Nurse as a cultural force which enables action and change. The meaning of this cultural force is conveyed in her use of the metaphor, '£ sign' in the context of continuing privatization and new public management in the NHS (Allan, 2016) and illustrates the challenges both to dominant forms of system working through new emerging relationships between organizations, networks and individual action.

The sociomaterial networks described were brought into being by nurses and existed for nurses through new actions which enabled individuals to work collaboratively across boundaries. This improved information processing (between humans) and led to new forms of knowledge and insight into learning *'it's okay to ask outside of my organisation' (Director of Nursing)* and in this quote from a care home manager:

> So now I have lots of networking colleagues that I can call, whether they are in care homes or in NHS settings …. and using the NHS emails has literally changed my practice …
>
> (Care home manager)

Another significant way sociomateriality is revealed was in stakeholders' descriptions of the Capital Nurse 'brand' which in their narrative descriptions became an entity which had its own agency. We argue that the Capital Nurse brand was another sociomaterial assemblage which helped nurses address the seemingly intractable problem of nurse recruitment and retention:

> Once um, a brand was identified … you could attach ideas to that …You are not standing alone … you're standing under an umbrella which you know you've got something to hold onto that allows you that permission and maybe authority to say let's do this … we know this is an issue, we know this could fix the problem.
>
> (Director of Nursing)

However, as Demant and Ravn (2020) argue, actors occupying different positions within networks have different affordances for stakeholder action.

3.3 | Affordances

Capital Nurse, supported by HEE, emerged as a collective network of like-minded people whose focus was on action (change):

> Under [this] leadership, this group melded into an early adopter group driving the Capital Nurse ideas and the formation of Capital Nurse forclinical.
>
> (CN Executive Nurse)

There were early adopters of Capital Nurse, a core group of executive nurses working with HEE, and a group of late adopters, still in senior NHS positions, who engaged after the initial ideas were discussed. As particular strands of work emerged, and as engagement and synergy between Capital Nurse and local organizations and/or across sectors became evident through new networks, these late adopters engaged with Capital Nurse in new forms of communication, entering into these new networks and forming their own.

> Capital Nurse gets us to look at data with completely different way … look at similarities for us all; issues we share
>
> (Director of Nursing)

Differences in stakeholder affordances were observed between stage 1 participants and stage 2 participants. In the following quote the participant describes the relationships between actors in different positions in organizations and roles of a number of actors, in several places, doing things with different access to knowledge about the organization and how it works. These different positions confer power but they are mutually interdependent (in this participant's eyes):

> Well, a lot of the folks you see who are on the working groups for the work, they're at the front line; they're not chief nurses, or directors … But you need some senior staff to facilitate those conversations and give people space and time to think and give permission to act. I think they're there to provide the vehicles and the levers, but the energy and drive and the real knowledge should come from, or does come from people who are closer to care delivery.
>
> (CN Board Member)

Among practice educators, there was a sense that the sociomateriality of the network created through a training course was fragile; that their relationships between each other as human actors were threatened by their relationships with other non-human actors such as their employing organizations and the busyness of their work. They described their fears that any success they had had in developing networks during their 6-month training with Capital Nurse training course had been threatened by their return to work and the sheer high level of demand at work. There was a sense that action achieved with Capital Nurse's support could not last:

> The risk is this [her network] will all disappear.
>
> (Practice educator, acute care)

All three practice educators felt the action learning sets established on the training course had been difficult to maintain after the end of the leadership course yet were necessary as their work was emotionally stressful and they needed support to keep going:

> You need support for [clinical nurses]. What surprised me from the action learning sets on our course was the emotions that people were struggling with at work. Serious stuff. Where would they take it if they hadn't been able to bring it there? Left I suppose…
>
> (Practice educator, acute care)

After the focus group ended, two of the practice educators agreed to begin a new action learning set with the principles of their Capital Nurse leadership training course to support each other's practice. The focus group appeared to act as a prompt for the network to be remade.

We suggest the strong commitment to Capital Nurse's purpose as a change vehicle described above could be understood as an inscription, a way of ascribing meaning to action in a network. Other inscriptions were Capital Nurse events, pan-London study days where speakers celebrated Capital Nurse achievements giving voice to the Capital Nurse way of working; and training events where skills and practices integral to the Capital Nurse way of working were shared. Many of the projects and events attended were described as having meaning, as powerful inscriptions, described as *'proof of outputs'* which is another way of inscribing meaning to external funders and supporters.

3.4 | Inscribed meaning in Capital Nurse

Inscription is seen in the way participants described the emergence and use of the Capital Nurse brand which was repeatedly emphasized as influential even at early stages of Capital Nurse's development in both the collective action of the network and in its success in effecting change:

> The concept itself of being a brand of people who feel an identity to something that actually is a very small team of people, who kind of pull that together, but it's the wider collective who've essentially supported it to keep it going and make it happen.
>
> (CN Board Member)

Another powerful inscription all stakeholders referred to was the video shot by HEE to disseminate the work by Capital Nurse. It was released in 2018 and was called the *Ella and Abi* film (Health Education

England, 2018). This is how a student nurse described seeing the video. Note how they emphasize the positive messages they wish from Capital Nurse, collaborative working and how Capital Nurse is targeted to recruitment and retention:

> I think the videos are really helpful, if you could put them out on social media that's a really big thing out there and people like us would watch it and you'd really get attracted to it and be like oh this is kind of interesting, let me find out a bit more about [Capital Nurse].
>
> (student nurse)

4 | DISCUSSION

We argue that sociomateriality can be an important cultural force which shapes organizational relationships in nursing between actors within networks. Using a focus on sociomateriality altered the emphasis from the individual to the collective (Demant & Ravn, 2020; Elder-Vass, 2019); to relational networks which were supported through Capital Nurse supporting and sustaining networks across boundaries and organizations in the NHS across London over 4 years with unfunded work which continues to date. The evaluation purposively set out to elicit experiences from stakeholders in different positions within the NHS in London. ANT allowed us to focus on affordances, that is, the macro, meso and micro positions that actors occupy and which allow them to act or negotiate against constraints (Demant & Ravn, 2020). The stage 2 findings are useful in illuminating how the relational networks worked within the NHS across London in facilitating actors to derive capacities and potentials through their relationships with others even those with minimal formal power like student nurses.

We have illustrated how material and immaterial technologies opened up possibilities of new forms of communication, action and networks in nursing in London. We argue that the sociomateriality of system technologies are important methods of collective and individual action. Technologies as seemingly 'simple' as attending a training course, meeting someone from another hospital and exchanging emails to keep in touch are key to understanding how nurses act collectively. It is interesting that these immaterial, invisible, everyday actions which through their longevity show network stability, have occurred in a largely women dominated profession whose work and contribution to society has been described as invisible (Latimer, 2018).

These findings suggest that the nurses we interviewed in our evaluation of Capital Nurse valued being introduced to collaborative working, through what they described as the *Capital Nurse brand* and *way of working*. They emphasized individual action in forming networks rather than systemic change as the way to address recruitment and retention in London. Our findings suggest that for students and clinical nurses there is agency even though structures are heavily influential in constructing conditions of work; that opportunities for action by individual nurses can be constructed and are therefore not entirely constrained by macro structures. This view is in line with much British theorizing around practice development (Manley et al., 2014). For executive and senior nurses our findings suggest that introducing the Capital Nurse model of working may have been a way to effect system change and thus address recruitment and retention problems. System change was seen as possible if grounded in a micro (individual) and meso (groups, networks) perspective rather than any expressed concern with macro structures (financial underfunding, gender disparity, patriarchy or nurses' lack of professional power). Participants did not refer to gender, patriarchy, underfunding or other macro structures in their narrative accounts of their involvement with Capital Nurse.

ANT makes it clear that humans (in our case, nurses) do not just interact with technologies, they exist as assemblages with them. We argue that the nurses working with Capital Nurse recognized these sociomaterial assemblages primarily in the networks and teams in which nurses work; these may be understood as human–technology relationships within complex healthcare environments. These assemblages also show that nurses are in a dynamic relationship with technology where agentic individual nurses use and modify forms of communication and construct new networks. Our findings suggest that nurses used the *Capital Nurse way of working* as a permissive vehicle which enabled nurses to establish contact with other nurses in different organizations. System change was achieved through working collaboratively within single organizations, across the capital by focusing on training future leaders in nursing across bands and specialisms and thus creating a positive culture for students to aspire to belong to. Through Capital Nurse nurses built up a recognizable brand of collaborative working which stakeholders across a range of organizations in different sectors and across different bands of employment describe as successful. At times this brand may appear superficial, such as in the badges which at least two of our participants cited as being a positive outcome for them of attending Capital Nurse training. But in the context of few opportunities to attend training that is not mandatory, attending workshops and training with acknowledgement of that in a badge to show that one has attended may be a way to maintain some individuality in an otherwise totalizing system (Goodman, 2013). As Latimer (2018, p. 2) has argued, sociomateriality helps with understanding the ordinary and mundane materialities of care:

> The 'stuff' of social life in medicine, social and health care [that] does not necessarily pertain to 'innovative health technologies' or to 'scientific expertise'.

Capital Nurse training and events enabled a responsive, flexible working by individual actors in networks with a shared purpose across the many boundaries which have prevented cross boundary work in London in the past. This cross boundary working enabled nurses to find both pan-London and locally relevant solutions. Stakeholders described the challenges to cross boundary and collaborative working as twofold. First, the NHS was described as a large and complex network

where organizations have over the last 20 years or so worked competitively and have been preoccupied internally in large part because of a challenging socio-economic context. This might be thought of as maintaining 'organizational sovereignty' while expanding formal and informal ways of working together professionally to achieve improved retention and recruitment and ultimately patient care. Models of working collaboratively while maintaining organizational sovereignty have been proposed before (Department of Health, 2014). Capital Nurse appears to offer a new, less formalized and more professionally centred model of working across organizations.

A second barrier to collaborative working was described by the stakeholders as a lack of clearly structured and standardized career development opportunities at early and mid-career which inhibit the retention of nurses at certain points in their careers and the need to succession plan in terms of nursing leadership. The NHS has a long history of silo working which results in either failing to work across professional and /or organizational boundaries or lacking the political capital to negotiate successfully across boundaries (Allen, 2000). It is significant that Capital Nurse has achieved collaborative, cross boundary working in recruitment and retention. It signifies a concern with professional development which supersedes organizational sovereignty and localism. As the practice educators, we interviewed argued, having developed their network and negotiated support for it, continuing support is required to embed such collaborative work against a background of busy clinical workloads and severe workforce shortages. The continuous forming and remaking of networks rely on relationships to be maintained but this could be viewed as a strength in a challenging work environment.

Rioux-Dubois and Perron (2016, p. 7) citing (Blok et al., 2011, p. 106) argue that ANT is particularly relevant in nursing and other situations '*whenever things accelerate; innovations proliferate; boundaries between groups are blurred; and the number of entities in the collective multiply*. Using a sociomateriality lens enabled us to focus on the action which was described by the participants in this evaluation of Capital Nurse. Unlike other frameworks, which focus on social structures and are therefore necessarily static, ANT can capture the dynamic and ever-changing quality of the network, understood as a moving target of hybrid relationships that make up the health care collective' (Rioux-Dubois & Perron, 2016). It is significant that this was a nursing-led initiative, suggested by nurses, organized by nurses and funded by HEE through executive nurse sponsorship which brought to the force the actions of nurses across the NHS to address the recruitment and retention crisis. Rather than see nurses as passive (female) actors in healthcare (Manojlovich, 2007), our findings show nurses to be actors who developed new networks to effect change in nursing. Capital Nurse supported the emergence of networks of actors who were changed as a result of new forms of communication and action in novel and complex ways. Our findings illustrate how nurses as actors developed relationships with both human and other actors (training days, the Capital Nurse badges, the new forms of networks), coming together and separating and sometimes reforming in sociomaterial assemblages. These assemblages include new networks and teams in which nurses used human–technology relationships within complex and fragmented healthcare environments. Our findings also show that new networks are possible when individual nurses come together, begin to work as a collective who identify shared interests and mobilize to affect change through shared, collective action. The alignment of interests between the heterogeneous actors which Rioux-Dubois and Perron (2016) describe appears to have found expression in the Capital Nurse brand which was identified with by different nurses (actors) with different individual motivations. The depth of meaning articulated by our participants illustrates ANT's central point that action is possible if collective interests align and are shared by the group.

4.1 | Limitations

This was a qualitative evaluation based on a relatively small number of interviews with stakeholder in one geographical location. Yet we believe that the background to the evaluation, the poor recruitment and retention of nurses in London, will resonate with nurses and nurse leaders globally.

The strength of ANT is that it focuses on the relational and describes relationships when actors come together to act which was a strong feature of our data although we accept that a limitation of our analysis is that we have not analysed the effects of gender, social class or ethnicity on actors' positions within networks we explored.

5 | CONCLUSIONS

The findings from this qualitative evaluation of the Capital Nurse programme in London are that nurses' use of networks led to novel models of communication and action to address the problems of recruitment and retention in London. This has been described by participants as the '*Capital Nurse model of working*'. A key strength of this model is a commitment from stakeholders at all levels to build networks and foster leadership to address entrenched challenges to creating a nursing workforce which has the right skills in the right place. It is a collaborative model of working which works at multiple levels both within single organizations and externally, through individual nurses within specialisms across the capital. The programme has fostered leadership in future leaders through collaborative working. There is evidence of change in how nurses across the capital work together to improve patient care. Our findings may resonate with nurses who seek to address the problem of recruitment and retention but also in other areas where nurses come together in networks to effect changes in practice.

Our findings show that nurses are aware of and engaged in sociomaterial contexts which both constrain and at the same time provide opportunities or challenges to produce change. While nurses at all levels were engaged as actors, it is significant that a small group of senior nurses working with HEE, recognized and strategically worked successfully across sociomaterial contexts in the NHS to obtain

funding for and then develop programme activity through Capital Nurse. Their aims were centred on professional activity through individual and collective action to work within the system across local boundaries rather than systemic change which tends to prevent individual nurses from working as a collective, professional group.

In using a lens of sociomateriality in this paper, we argue that sociomateriality should be considered outside the clinical practice setting and as part of nurses' professional development and organizational practice, that is, how they plan their career, how they address recruitment and retention, how they communicate across organizations about nursing issues.

A sociomateriality lens allowed us to make sense of the collective action described in the findings and the ways in which actors (nurses, educators, care home managers, senior trust managers) working as individuals and in teams promoted professional agendas, nursing leadership and nursing career pathways. During the Pandemic, training and recruitment did not stop because the Capital way of working was well embedded and systematized in Capital Nurse projects such as the Preceptorship training and skills passport. As our findings suggest, such ways of working are under constant threat when they subvert existing fragmented and localized (trust based) working (2014). Our findings show that nurses fear that innovation, for example, working outside organizations, is unsustainable. Following Booth et al. (2016) and Rioux-Dubois and Perron (2016) in understanding technology as a form of materiality integral to nursing activities and relations, we illustrate how technologies opened up possibilities of new forms of communication, action and networks in nursing in London which we view as cultural forces which sustain change and promote innovation.

AUTHOR CONTRIBUTIONS

Helen T. Allan: conceptualisation, data curation, formal analysis, funding acquisition, investigation, methodology and project administration. **Chris Caldwell**: conceptualisation, funding acquisition, methodology. **Sinead Mehigan**: conceptualisation, funding acquisition, methodology. **Selina Trueman**: project administration.

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CONFLICT OF INTEREST STATEMENT

None of the authors have conflicts of interest.

PEER REVIEW

The peer review history for this article is available at https://www.webofscience.com/api/gateway/wos/peer-review/10.1111/jan.15799.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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