'Memory Mate' as Boundary Object in Cancer Treatment for Patients with Dementia

Rachel Hurdley, Jane Hopkinson

Abstract—This article is based on observation of a crossdisciplinary, cross-institutional team that worked on an intervention called 'Memory Mate' for use in a UK Cancer Centre. This aimed to improve treatment outcomes for patients who had comorbid dementia or other memory impairment. Comorbid patients present ambiguous, spoiled identities, problematising the boundaries of health specialisms and frames of understanding. Memory Mate is theorised as a boundary object facilitating service transformation by changing relations between oncology and mental health care practice. It crosses the boundaries between oncology and mental health. Its introduction signifies an important step in reconfiguring relations between the specialisms. As a boundary object, it contains parallel, even contesting worlds, with potential to enable an eventual synthesis of the double stigma of cancer and dementia. Memory Mate comprises physical things, such as an animation, but its principal value is in the interaction it initiates across disciplines and services. It supports evolution of practices to address a newly emergent challenge for health service patient provision, namely the cancer with comorbid dementia/cognitive impairment. Getting clinicians from different disciplines working together on a practical solution generates a dialogue that can shift professional identity and change the culture of practice.

Keywords—Boundary object, cancer, dementia, interdisciplinary teams.

I. INTRODUCTION

Mac Concernment (MM) was an intervention developed by a collaborative academic/clinical team, and now implemented at a Cancer Centre. It was designed to improve treatment outcomes for patients with cancer and comorbid dementia. It is well-known that people with dementia (PWD) have poorer outcomes from cancer treatment [1]. The project was funded by a Welsh Government 'Welsh Dementia Action Plan' grant to improve the health outcomes of PWD [2]. From initial grant proposal development to implementation, MM took two years. The research offers a good practice model in interdisciplinary working for service reconfiguration that is internationally relevant.

The importance of support for PWD, as well as support for carers, and the need for oncology staff with expertise in dementia have been widely identified in other studies [3]-[6]. The research underpinning the MM project concluded that: 'Embedding biomedical treatment of cancer within a dementiafriendly psychosocial system may enable safe cancer treatment for a greater number of people with dementia or milder cognitive impairment' [7]. MM comprises physical things, but its principal value is in the interactional space it opens up across disciplines and services. It supports evolution of practices to address a newly emergent challenge for health service provision, namely the cancer patient with comorbid dementia/ cognitive impairment. Getting clinicians from different disciplines working together on a practical solution generates a dialogue that can shift professional identity and change the culture of practice.

MM includes 'The Memory Mate Animation', a short bilingual film (English and Welsh) that is shown in the Cancer Centre's outpatient waiting room, normalising and raising awareness of the commonality of memory issues, and asking patients/carers to disclose these as soon as possible. This is accompanied by a bilingual booklet, poster and stickers that are put on patient files. There are specialist 'Memory Mate' staff identifiable by a badge whom patients and carers can ask for help and advice, and all staff are now trained in dementia awareness [8]. A Supportive Care helpline is available for people with memory difficulties. If patients (or their carers) disclose memory problems, they are given a medication and appointment schedule for recording their treatment and to take to appointments and other resources to support adherence to treatments and safe management of side effects. They are encouraged to involve a family member or friend in treatment consultation and in the management of complex information for taking treatments and managing side effects at home.

Running alongside the clinical/academic project was a sociological case study, conducted by Rachel Hurdley, which is the basis for this article. The initial research question was 'What is it that's going on here?' [9]. Its aim was to examine the process of developing MM, to propose a model of good practice. The two project leads, Jane Hopkinson and Jayne Elias, Deputy Director of Nursing for the Cancer Centre, agreed on dual aims from the outset. MM was not only a small-scale service innovation; it was also an NHS (UK National Health Service) service transformation initiative. This was not discussed explicitly during the meetings, which focused on the producing a substantive MM. 'Clinical tribalism' is a known barrier to knowledge exchange and collaboration [10], and MM crosses the boundaries between oncology and mental health. Its introduction signifies an important step in reconfiguring

Rachel Hurdley is with the Cardiff University School of Social Sciences, Cardiff, CF10 3WT, UK (corresponding author, phone: 44-029 2087 4000; email: HurdleyR1@cardiff.ac.uk).

Jane Hopkinson is with the Cardiff University School of Healthcare Sciences, Cardiff, CF24 0AB, UK (e-mail: HopkinsonJB@cardiff.ac.uk).

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relations between the specialisms.

The paper begins with the theoretical context and literature review, followed by a description of methods and methodology, and the project's ethics. Data collection and the results follow, with a discussion. The concluding section summarises the value of the boundary object thesis.

II. THEORETICAL CONTEXT

The dual purpose of the MM project - local service improvement and wider NHS service transformation - led the sociological interpretation to follow two lines. One line traced the team formation, discourses, collaborations and frictions. This found that long-term informal networks and dialogues were as important to team formation as formal institutional connections. There were frictions between some discourses which were not fully resolved, such as those between Mild Cognitive Impairment/Dementia, and Stigma/Dignity, but broad alignment on Patient Safety. The notable absence of an oncology consultant on the Steering Group meant that clinicians and academics met in a flat power structure. Nevertheless, key decisions were made by the two project leads, informed by email consultation with Steering Group members. PWD and their carers also advised on the final MM animated film. The article affirms that service interventions such as MM rely on collaborative networks that develop over time, with high levels of trust and clear leadership. Decisions based on discursive face-to-face meetings make a strong contribution to final outputs, and people with lived experience of the health issue in question should be consulted on outputs, as they can make a valuable contribution to the product.

A second interpretive line conceptualised the process as one of emergent change. A non-normative analysis of transformation, particularly considering 'the importance of conflict between actors - and the fact that this can be productive ... challenges the dominant management ideology to minimise this' [11]. The interpretive process was iterative, initially focusing on themes, which led to a number of possible concepts for theorising the empirical data. While there was consensus on what MM was, as a material resource, the frames of oncology and mental health remained separate. Thus, a concept that had been present throughout the interpretive process came to the fore: boundaries. Boundaries can be employed variously in differing contexts, stemming from [12], which posits boundary work as demarcating scientific knowledge and ideology. Building on this is the Science, Technology and Society (STS) concept of boundary objects. 'These common objects form the boundaries between groups through flexibility and shared structure-they are the stuff of action' [13]. 'Boundary object' is therefore adopted as a useful trope for understanding early steps in service transformation. The boundary object, MM, could address the lived experience of patients with cancer and dementia - the double stigma of a decaying mind and decaying body - to enable changing clinical practice. It therefore offers the promise of changing oncological culture through eventual synthesis of these stigmas.

III. LITERATURE REVIEW

This section reviews the literature in two parts. First, we consider how teams are described and conceptualised. Second, we briefly contextualise the central figure of the patient. The latter is more fully addressed in the Discussion Section, since interpretations emerged and changed during the fieldwork.

A. Teams, Frames and Boundaries

Interactive talk is vital for innovation, since, '... teams' dialogical exchange facilitates the articulation of tacit knowledge and opens up the communicative space for the creation of new knowledge' [14]. Knowledge-brokering can be an important process in this, which can be facilitated by specialist roles [15]. This idea of a communicative space resonates with the concept of Communities of Practice [CoP] [16], which has been used extensively in research on teams and knowledge. The 'process of "thinking together" is conceptualized as a key part of meaningful CoP, where 'people guide each other through their understandings of the same problems in an area of mutual interest, thus indirectly sharing tacit knowledge.' [17]. CoPs are developed through this process and cannot be constructed in advance. An extension of CoP, 'Landscapes of Practice' [LoP] [18], [19], has been picked up in organisational research as, 'geographies of competences' where, '...individual agency is important in developing relationships with others and so mutually negotiating practice ... as a complex, multidimensional phenomenon' [17, p.389]. LoP change according to current problems to be addressed, so are always emergent. Frames and boundaries remain consistent tropes in the sociology of health and illness [20]-[23].

B. The Patient, Dementia and Cancer

The patient was central to all discussions, as was patient safety. The MM project was premised on the fact that a patient with both cancer and dementia is a problematic. Patient safety is compromised, but, critically, so is oncology clinicians' expertise, since dementia and cognitive impairment are not within their specialist frame of knowledge. Reference [24], in the interview study regarding patients dying with cancer and coincidental dementia, argues for the importance of multidisciplinary teams. Patient safety is a risky business, creating friction between, for example, patient dignity and risk reduction, ideals and practices/dispositions. Reference [25] identifies a 'moral community' in discourses of patient safety, which challenges management discourses of regimes and systems. Further, an ethnography of older patient care in an acute setting perceives '... risk regimes ... diminishing their sense of self-worth and threatening their dignity' [26].

A culture of stigma is widely perceived to surround dementia [27]-[29]. In Goffman's key definition, 'The most fortunate of normals is likely to have his half hidden failing, and for every little failing there is a social occasion when it will loom large, creating a shameful gap between virtual and actual social identity' [30]. However, even stigma remains an ambiguous and doubtful frame of reference. A systematic review found that, '... relevant studies expose numerous limitations and the results remain unclear and inconsistent to some extent ...' [31].

Patients with memory problems present a double ambiguity, since it is uncertain whether they have Mild Cognitive Impairment [MCI] as a normal process of ageing or Alzheimer's Disease [32]. Following the argument that a 'patient whose diagnosis is uncertain ... need[s] to become a stable boundary object.' [33], the researchers began the project with an assumption that 'the patient' was the central figure in the interactional boundary work. However, a chance conversation turned the theoretical focus towards the works of [13, p.604] and [34], leading to a realisation that MM was itself the boundary object that made the collaboration for its creation possible [35], [36].

IV. METHODS AND METHODOLOGY

MM is a psychosocial intervention [37], rather than biomedical, and the development project was discursive in character. In order to gather as much data as possible, a multimethod qualitative approach was adopted: fieldwork, interview and documentary data collection [38]. This was pragmatic, since Hurdley was conducting a secondary sociological project about the primary MM project, the parameters and schedule for which had already been established. She was introduced to the group by Hopkinson, explained the sociological project and ensured all participants gave informed consent (see Ethics section). The principal research question was premised on Hurdley being a member/participant observer at the Steering Group meeting and workshops for the development of MM: 'What is it that's going on here?' [9, p.10]. The primary method was participant observation of the development of a service intervention over three encounters: a Steering Group Meeting and two workshops. Hurdley wrote field notes at the Steering Group meeting and the two workshops. She also took photographs of workshop work-in-progress documents and PowerPoint presentations. As a participant, Hurdley reflected on her potential to disrupt the team. Having been introduced by the academic project leader, Hopkinson, her presence was 'vouched for', which facilitated entry. Rather than using a voice recorder, she decided to make handwritten notes, as other members did this. As one of several academics on the team, she participated in the mixed groups during the workshops. Because the team comprised 10-12 people during the three encounters, she could 'merge into the background' as one of the quieter members [39]. As such, she remained a 'marginal' member [40].

Since understanding the dual intentions of the two project leaders was critical to framing the encounters, Hurdley undertook four informal face-to-face and telephone conversations with the academic lead, Jane Hopkinson, recorded in handwritten notes. Hopkinson also sent Hurdley a chronology of the MM project over the two-year period, including the initial grant application, email exchanges and meetings with other team members. The data that support the findings of this study are available from the Rachel Hurdley upon reasonable request.

Handwritten field notes (of talk and action) and the documents provided by Hopkinson were layered with

additional notes and analytic memos. These were analysed for content, leading to thematic analysis and emergent theory [41]-[43]. This is not strictly grounded theory [44], but making fieldnotes and subsequent reconstructions always implies interpretation [41]. As chronology was important, it was vital to maintain the integrity of field notes, rather than risk fragmentation [45]. All the data were reproduced in physical form and placed on Hurdley's study floor for addition of sticky notes, coloured felt tip diagrams and index cards, in an iterative 'messy' process of interpretation [46]. Collectively, these methods are allied to an attitude towards '... qualitative research, as a set of interpretive practices [which] embraces within its own history, constant tensions, and contradictions over the project itself, including its methods, and the forms its findings and interpretations take' [47]. Thus, an interpretive methodology underpinned the project.

A. Ethics

This project was approved by the University Research Ethics Committee. All participants from the Cancer Centre and the University, as well as the animator, were given written information about the project and gave written consent. Pseudonyms are used throughout, except for participants who expressed a wish not to be pseudonymised. They approved the article for publication and had the option to withdraw their consent fully or partially prior to final publication. Service users were given draft MM outputs for comments but were not participants in the sociological project, as they were not members of the Steering Group and did not attend the workshops. Of great importance to this decision is the way in which clinicians are trained to change their behaviour in front of patients [48]. Further, research on patient-centred care '... highlights the difficulties involved in making teams of such heterogeneous members...' accomplish successful interactional work [49].

B. Data Collection

Longstanding networks laid the groundwork for the MM project. Mandy King and Jane Hopkinson, staff in the School of Healthcare Sciences, were the principal initial academic collaborators. Crucially, King had clinical experience in dementia and mental health, and had conducted some previous research on dementia. Hopkinson had clinical experience of working with older people, including PWD, but her research focus was on end of life/palliative and cancer care. Happenstance, coincidence and personal interests played important roles. Like so many innovative ideas, the project began with a corridor conversation between Hopkinson and an oncology staff nurse, who thought support for PWD attending the out-patient department should be improved [50]. Hopkinson approached the Executive Director of Nursing at a Cancer Centre. Her Deputy, Jayne Elias, picked up the lead on the clinical side because of her background as mental health nurse, with an MSc focusing on care for PWD. The Director of the Wales Centre for Evidence Based Care, a Radiology/Oncology lecturer and an Occupational Therapy lecturer were also involved. Prior to the MM project, a systematic review and pilot

study were conducted [1], [51]. Therefore, the team already comprised staff in multiple disciplines from the University and the Cancer Centre, who then collaborated on a bid in late 2018, to develop a 'Cancer Memory Mate', using a Welsh Dementia Action Plan grant. Hopkinson invited sociologist Rachel Hurdley to be part of the team, in order to observe and interpret the MM development process. Jayne Elias invited Marie, Clinical Nurse Specialist and Supportive Care Lead Nurse, and any clinicians who expressed an interest, including ward nurses. A professional animator, Dave, was contacted by Hopkinson to produce the planned web animation. Not all members could attend all three sessions, due to work commitments.

At the first meeting, MM is introduced by Elias as an intervention that 'feels right', 'fits in with our service model' and meets a 'sense-check with our patients'. MM would not exclude any patients with cognitive impairment, but the focus must be PWD. For the animation to work, says Dave, everyone has to be, 'on the journey'. There are different views as to whether MM should be introduced at consultations or 'as soon as they come in the door'. Elias comments that implementation will be complicated by 'culture': what patients disclose, how staff introduce MM and support patients. Email exchanges follow, arranging a workshop agenda, with the objective of discussing the animation and potential MM outputs.

At the first workshop, the objective is to identify what MM should comprise. While the funding is for dementia, the team agrees that, since patients are reluctant to disclose their diagnosis [51], MM would focus on memory loss and MCI. Members work in small groups, collaborating on ideas that are written on post-notes and organised on A1 sheets. Individuals from the groups then present these to the team. Feedback from small groups suggests that MM should be a paper resource, rather than an animation. Team members discuss what this should be: a resource box, an electronic resource, a diary, a staff tick list, which she then summarises. Later email exchanges include a summary of MM 'so far' and there are meetings between the project leads and Dave to develop a prototype storyboard. Elias also enlists Marie's help to write the storyboard.

At the second workshop, the objective is to discuss the animation and other MM components, such as posters and information leaflets. The offer could be a 'memory file' for patients to keep, a SAFE checklist [an acronym: Share information, Ask for help, Find side effects quickly and get help in an Emergency] for clinicians and an up-to-date carer support leaflet. Hopkinson posits the idea of 'Memory Mates': staff who will support those with memory problems. Draft documents are discussed in small groups and the team as a whole. Dave presents the draft storyboard, which is 'eye catching', albeit raising a few concerns, according to clinicians. These are resolved during the next stage of the process.

Following further collaboration on the storyboard between the project leads and animator, the team (via email) and service users comment on the draft. There is a team vote on the MM logo. The animation and MM documents are completed and shared with the team. Dementia awareness in a Cancer Centre is implemented. The next section unfolds the teamwork process that accomplished this, through thematic analysis.

V.RESULTS

A. Shared History

The account of the project's preparatory work represents an archaeological layer of the MM project. Collaborative work takes great effort to maintain [14]. Moreover, it relies on the personalities of those involved, and the establishment of longstanding relationships. Happenstance, personal research interests, networks and grant opportunities combine in an ideal culture to allow the MM collaboration to happen.

B. Leadership

Hopkinson, as academic leader for development of MM, was a key figure in all three sessions. There was no noticeable conflict between her and the clinical lead, Elias. Other research on inter- and intra-professional teams found that boundary work can be both competitive and collaborative, and '...high status can be a source of intraprofessional conflict, especially when high-status actors are co-present in interactions with others' [52]. Clear allocation of work, in that Hopkinson led the academic stage, brokering knowledge between team members, while Elias took it forward to production, avoided conflict. Reference [53] perceives that '...knowledge-brokering roles are enacted in line with professional legitimacy, with medical consultants very visible in the network'. Thus, another reason for the more collaborative, rather than competitive, work by the leaders could have been the absence of a medical consultant on the team.

C. Talk in Interaction

Here, we look at the forms of talk in interaction that produce and maintain the team as a group: small talk, humour and anecdote. Different tactics by team members facilitate a sense of belonging and group identity [11]. During pauses in the formal work of meetings, members chat with their neighbours, not only about the work in hand, but also about the journey, the weather, and ask questions about what their work life involves. Seemingly trivial small talk performs important work in accomplishing group membership, as it establishes frames of understanding. Such instances resonate with the concept that '... talk occurring when a small number of participants ... settle into ... a few moments cut off from (or carried on to the side of) the instrumental tasks' constructs a frame of membership which allows others to join in, aligning themselves through performing sociability [54].

Two linked strategies serve dual purposes: humour and anecdote. Little jokes abound in the meeting and workshop, such as a suggestion to combine a film with the beneficial effects of yoga into, 'filming yoga, then!' and the 'cringey' portrait photos initially proposed for MM posters, prompting general laughter. Humour is also a theme in discussions on MM, as the earlier study shows its use between clinicians and patients when talking about MCI [51]. It therefore has a strong presence in the interactions and, like small talk, acts as an 'identification ritual' [55], [56]. Being humorous and joining in with shared laughter therefore strengthens group membership. In its double role, however, humour is also constructed as an important feature in MM, to invite engagement from its intended audience.

In all three encounters, anecdotes about patients and family members who have dementia are recounted and heard, either within the whole team, in smaller workshop groups or in conversations between neighbours. A study of innovation teams refers to '... the empathic listening tactic [which] is sensemaking via sharing anecdotes ...' to understand stakeholder needs and ground innovation in "day-to-day realities" [57]. Sharing such stories within the team is a demonstration of this tactic. However, we argue that practices of telling and listening to these accounts are performances of empathy by both teller and listener. They are not just clinicians and academics; they have real-life experiences of dementia. For example, they provide accounts of patients with memory loss getting lost in the Cancer Centre and worries about 'scared' patients forgetting to take tablets. Several express a concern that an animation focusing only on dementia will 'frighten' patients into thinking they have the disease. Moreover, carers, who often accompany patients with memory problems, also feature strongly in the team talk. Team empathy for and awareness of carers and their needs is unanimous, strengthening 'who we are'. Performing empathy with PWD and their careers, and with the teller, not only grounds MM in the lived experience of dementia, but also produces bonds of shared humanity within the group.

D. 'Stigma Is the Problem'

Team members use this in a similarly dual method when they refer to PWD and their carers' 'fear of stigma' hindering disclosure of a dementia diagnosis, or to patients/carers disclosing memory problems. The paradox, as clinicians point out, is that dementia diagnosis is hindered by the discourse of 'patient dignity', meaning that the possibility of dementia cannot be raised by the clinician. Producing MM is complicated by this, particularly the visual representation of memory loss, and the idea of 'normalising' memory loss - rather than dementia - is frequently articulated [58]. Even though some clinicians' accounts contradict it, saying patients are happy to disclose a diagnosis of dementia or memory loss, stigma remains a dominant frame for MM. This frame enables team members to perform empathy and cultural awareness, beyond the walls of the university and the Cancer Centre. The shared discourse strengthens team identity. It also returns to the need for humour in MM, to neutralise memory deficit. Group membership and group purpose are thus secured within the stigma frame. Moreover, while health-related stigma has come to dominate in popular media and academic studies [59], we argue that Goffman's definition still haunts cultural memory in relation to team members themselves [30]. No one in the team fulfils all competencies: oncology, geriatric mental health, clinical knowledge and practice, academic knowledge and practice, professional expertise in animation and other media, organisation theory and innovation. Group identity relies on tacit shared knowledge that all its members are deficient. It is their gaps that enable members to fit together as a team.

The continuing resistance in team meetings to the stigma discourse does however demonstrate the contested status of 'the patient'. Questions abound: Does the patient have memory deficit, and if so, what sort of memory deficit; are they alone or supported by a carer? Will either of them disclose memory deficit? Does the patient or carer fear poorer cancer care and outcome because of stigma, and are they justified in this? By denying cultural stigma, and relying on patient 'dignity', clinicians can place the onus of disclosure on the individual. The other side of the paradox, then, is that patient safety relies on self-disclosure, yet the evidence is that PWD have poorer clinical outcomes [1], [4], [60]. Such 'liminal stigma', in which the patient undergoes stigmatising and destigmatising processes through team talk [61], makes the patient a mobile, ambivalent figure. This doubtful status is connected with other ambiguities, discussed in the two themes that follow.

E. Memory

Just as the patient is an ambivalent figure in team talk, so is 'memory', acutely demonstrating the lack of alignment which would enable memory to frame a united understanding. There is friction around what MM is supposed to address: MCI/agerelated 'normal' memory loss, expected 'chemo brain' or dementia-related memory problems. As Dave shows the draft animation storyboard, Marie says, 'if one tenth of viewers have dementia it fits the brief'. However, Neil feels it is 'spreading too thin', asking, 'when do you get to the cancer bit?'. Members agree with Dave in not mentioning dementia at all, but then agree with Marie that it is wrong not to mention dementia. The central question over MM is whether to 'normalise' memory impairment during cancer treatment or to highlight it as a comorbidity requiring special treatment. In the group imaginary, 'memory' challenges who 'we' are. As oncology clinicians, the Cancer Centre staff focus on cancer treatment; this coalesces their group identity. 'Chemo brain' is a normal attribute of treatment. MCI as a normal process of ageing retains the patient as a 'cancer patient' and thus their professional identity and competency, yet memory loss as a symptom of dementia threatens not only the patient's role, but also the staff members'. As oncology clinicians, mental health does not lie within their professional competence.

F. A Cultural Divide

Although the underlying objective of service transformation - bringing dementia awareness into oncology practice - is not made a dominant discursive trope by the two project leaders, it nevertheless emerges throughout the three encounters. Elias states in the first meeting, 'we need to raise dementia awareness full stop', and refers to the 'culture' of the Cancer Centre, but does not press the issue. Culture change cannot be imposed on an institution. The second workshop begins with 'what works' from the 'memory aid' scoping review [1]. A clinician problematises it: 'we're an oncology department'. King 'translates' terms such as 'executive memory' for the clinicians. Another clinician expresses the difficulty of linking MM with chemotherapy as, 'we would need 30 boxes,' to cover all the possible side effects. The idea of a 'memory file' is

problematised, with one clinician asking why patients need a physical diary, 'because appointments change'.

At one point, a clinician refers to the need 'to change to avoid risk', and at another, a nurse mentions that 'staff definitely need educating'. These are critical moments. The project leaders, Hopkinson and Elias, both inhabit double identities, since they have backgrounds in both oncology and mental health. It is these very ambivalences, in patient, memory and staff identities, upon which their dual objectives of producing MM and introducing service transformation hinge. As a senior clinician comments, MM must go 'hand-in-hand with staff awareness'. A small, companionable intervention, MM intertwines what clinicians already recognise with a culture shift. As such, it is a fuzzy object, which can negotiate the blurred boundaries of memory, patient and staff identities. The Discussion section theorises how this works.

VI. DISCUSSION

This section demonstrates how treating MM as a boundary object is a pragmatic approach to service innovation. While trust was established through empathy, sharing accounts and common tropes, this did not answer how the team accomplished MM. Models of Communities or LoP could help understand this process only to the extent that the team was 'thinking together' to resolve a common problem [17, p.389]. However, 'taken-for-grantedness of artifacts and organizational arrangements is a *sine qua non* of membership in a community of practice' [62], which was not the case here.

Reference [33, p.1404] suggests that, '[t]he lens of boundary work and boundary object theory could inform reviews of current organisational practice around patient groups that pose interdisciplinary, diagnostic and management challenges'. As the Literature Section shows, the concept of boundaries is used in differing contexts, stemming from the first theorisation of boundary work as demarcating scientific knowledge and ideology [12]. Yet something else was happening here, which resonates with the framing of, '... the concept [of boundary objects] ... motivated by a desire to analyze the nature of cooperative work in the absence of consensus' [13, p.604]. This study argues, '... it seemed ... that the consensus model was untrue. Consensus was rarely reached, and fragile when it was, but cooperation continued, often unproblematically. How might this be explained?'. The question is answered with the concept of the boundary object that, '(... as a set of work arrangements that are at once material and processual) resides between social worlds (or communities of practice) where it is ill structured ...' [13, pp.604-5].

MM is the fuzzy boundary object about which all team members can agree, without necessarily agreeing on its theoretical foundations or quite what category of 'memory' and which 'patient' will benefit from it. All paradoxes and frictions can be contained in MM. As one study, examining early stages of boundary object development, finds, '[c]ross-disciplinary collaborators can share similar goals, yet nonetheless face frictions from differences in professional expertise, practices, and technical systems'. However, '... if boundary objects help to span disciplinary divides, the same challenges are likely to hinder initial boundary object development ...' [35, p.76]. The question of how MM moves from concept to artefact can be answered by recognising that MM as an 'epistemic object' in the meeting and workshops then starts to change [43], through smaller meetings and email/telephone exchanges. Storyboard becomes animation, drafts become publications. Hopkinson, formerly a practising nurse and now an academic, hands MM over to Elias for its materialisation. '[W]hen the movement between the two forms either scales up or becomes standardized, then boundary objects begin to move and change into infrastructure, into standards (particularly methodological standards), and into things and yet other processes ...' [13, pp.605-6].

The Results Section showed how clear leadership from the research and practice institutions, with relations grounded in a history of collaboration, brought MM out of the discursive realm into the material. Once MM becomes a thing of persons, texts and screens, and is implemented as a process in the Cancer Centre, it is standardised, open to evaluation and scaling up across the sector. 'Contemporary ideas or practices are not static or timeless but represent the product of generations of interdependent networks' [63]. This interpretation of a service innovation shows both the validity of 'boundary object' as a concept and its transferability in service intervention development.

VII. CONCLUSION

This final section is speculative, awaiting further research in service interventions. The archaeology of MM could not be fully traced here, nor its implementation, or channelling of dementia awareness into institutional oncology. MM, in containing unresolved conflicts, frictions and ambiguities, holds forth the potential for synthesizing the problematic identities of patients with cancer and dementia. Clinical practice boundaries resist this synthesis, which is the lived experience of patients and carers. Clinical cancer care is highly valued by others, whereas dementia care is too often informal, at the margins of clinical practice (although this is changing). Boundary objects are 'the stuff of action' [13, p.603], and it is through small, incremental changes in practice that cultures change. MM innovates a practical synthesis of mental health and oncology, thus contributing to a shift in clinical boundarykeeping. Moreover, comorbid patients are of doubtful status, as decaying minds and bodies query the very idea of personhood. Yet decay is itself a process of change; this double change in personhood could, through effecting small, incremental syntheses in clinical practice, change cultural understanding of the 'spoiled' identity of dementia.

The analytic process conveys the recognition of MM as a container (safe space) for complexity, contradiction, and competing perspectives to become part of a dialogue that shifts hearts, minds and subsequently practice. It takes what is seemingly fixed, such as the boundaries of oncology practice, and creates a place of negotiation that can shift the boundaries in diverse ways. For example, by showing it is normal for patients to forget to take tablets, including cancer treatments, but also by allowing responsibility for safety risk to be managed. MM is material, but its real value is in the space it opens for teamwork across disciplines and services. It addresses an emergent challenge for health service provision, namely the cancer patient with comorbid dementia or cognitive impairment.

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