Why market(er)s can't handle hot objects

John Finch and Susi Geiger

University of Strathclyde, Department of Marketing, Glasgow, United Kingdom

A virtual box has been drawn around everything that moves between communities of practice. The tendency of researchers to label every artefact that 'lives' in that space a boundary object is troubling because it forces us to deny what we observe, to ignore the finer points of the boundary object definition, or to awkwardly wrap new theories around the box. It's time to stop these gymnastics (Lee, 2007, p. 314)

Introduction

Lee (2007) does many of us a great service in pointing out the shortcomings and inconsistencies of the turn to boundary objects in organization studies. "Boundary objects" is by now an old (Star and Griesemer, 1989) and a very influential idea (for instance, Bowker and Star, 1999; Henderson, 1999; Bechky, 2003a, 2003b; Sapsed and Salter, 2004), and one that has recently found its way into the IMP community's research (Finch and Geiger, 2006; Easton and Mason, 2009). A boundary object, aligned with standards, enables members of distinct groups or communities of practice to collaborate by carrying at least three meanings: one for each party to an episode of interaction and some common meaning to allow for collaboration and exchange between members of these groups. Given the focus on collaborations, exchanges and interactions, the concept of boundary objects may be as relevant to coordination in markets as to other means of social organizing. However, given our focus on market settings, we contend that the notion of boundary object should not be

separated from the boundary work that actors have to undertake in order to stabilise that object in the first place.

In this paper, we focus on the role of the (material) object in the collaborations, contests and interactions in market settings. We move the discussion on from boundary objects in markets to boundary work with and around objects through the presentation of two caselets from the pharmaceutical industry – one of a failed market (object) and one of a successful market (object), and of the actors' work of constructing and contesting markets through the object.

Our overall objective is to contribute to the question of 'what makes a market' by examining the role of the material object in market making. We do so in the realm of pharmaceutical marketing because of recent suggestions that "pharmaceutical company marketing communications and new product development strategies are designed to create legitimate markets for the products that *can be made* by having conditions that *can be treated* defined as medical conditions" (Brennan, Eagle and Rice 2010, p. 18; original emphasis). The activities of making, treating and defining indicate a central role of the material object in these markets, and the complex work of marketers in stabilizing and positioning these objects, for instance, in connection with regulators' standards and procedures. We also argue that a product- or, more generally speaking, object-centric view of making market is at the heart of much general marketing management thinking, though this dimension has been largely taken for granted by researchers. Ansoff's famous matrix of product-market growth, to choose just one example from the conventional marketing management textbook toolbox, explains how companies can grow through marketing new or existing products into new or existing markets. The (implied) corollary of this suggestion is that products and markets are interdependent and inter-determining.

The remainder of the paper develops as follows. In order to investigate the role of the marketing object in making and coordinating markets, we start from the notion of boundary object as a coordination device, as it has emerged from science and technology studies and taken up in organisational and information technology studies.

This is followed by a short review of recent literature in medical sociology (and its most recent inroads into the marketing domain) examining how pharmaceutical marketers' work on material objects may contribute to market making. Building on this dual conceptual basis, we present two short and contrasting case studies based on secondary data. We examine the drug Sarafem and its inventor Eli Lilly's attempts at constructing a market for its treatment of premenstrual dysphoric disorder. We contrast this with the case of the drug Sancuso and its developer ProStrakan's approach of devising a new technology of application for an established drug. We utilise extant market studies research to elaborate on the central question of this paper – what is the role of the object in making a market? A conclusion summarises the discussion and encourages further empirical research in this area.

Boundary Objects: The concept's ascent and fall

A recent call has been made in IMP circles of "visualis[ing] organisations and their relationships as networks of boundary objects" (Easton and Mason 2009, p. 14). This call can be extended to markets, too, as Finch and Geiger (forthcoming) explore. However, early research into the use of the boundary object concept for business network or market studies research leaves open the question of the extent to which objects are determining of or contributing to market interactions in general and market-making more particularly.

Introducing the notion of boundary object, Star and Griesemer's (1989) point of departure was the question of how objects can originate and coexist in different social worlds

at the same time, while retaining some sense of coherence, a notion that could prove important in market settings too:

> Boundary objects are objects which are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. They are weakly structured in common use, and become strongly structured in individual-site use. (p. 393)

Star and Griesemer elaborated their general concept of boundary object by undertaking an historical study of the early years of the Museum or Vertebrate Zoology at Berkeley, California. Although they do not put it quite like this, theirs is a story of how the museum became a centre of science and calculation, showing how members of the new professional science of zoology came to both collaborate with and also to some extent dominate the established interests of (the now) amateurs, such as conservationists, trappers and farmers.

Star and Griesemer position their contribution in the area of Science and Technology Studies, specifically as an advance on the established "model" of interessement, which they associate with Callon, Latour and Law. Interessement is a label given to a process whereby some recruit or persuade others to serve an interest, indeed, in order that the interest and its follows acquire a capacity of agency. Star and Griesemer's contribution is to counter what they see as a uni-directional process of interessement, typically of scientists being or becoming professional by acquiring a capacity to generalize their activities and findings. Their alternative is an "n-dimensional" or "ecological" approach in which many actors already have a capacity to act and make exchanges and collaborate in recognition of their own particular interests. One central issue in Star and Griesemer's definition of a boundary object is that for the boundary object to be successful, it has to help settle or standardize interpretations, actions and/or relationships. Indeed, as Lee (2007) points out, of the four types of boundary object that Star and Griesemer (1989) list – repositories, ideal types,

coincident boundaries and standardized forms – at least two rely explicitly on the establishment of standards as a key component. The conflation of standardizing and boundary object is confusing. As readers, we might be justified in expecting the dead animals to be boundary objects in Star and Griesemer's analysis, not the means of standardizing the trapping, killing, preserving of specimens and recording details of the context of these activities.

Zeiss and Groenewegen's (2009) trace the uptake of the boundary object concept between 1989 and 2008, tracing 442 articles that referenced the concept and/or Star and Griesemer's article, of which 58 appeared in the top management journals, 58 in sociology and 52 in information and library science. This review also showed that the more the concept established itself in the organisational and management communities, the fewer articles referenced back to its origins in Star and Griesemer (1989). Crucially, while many of the articles took up the notion of boundary object, its twin component of standardization seemed to have been passed over in much of the organisational and IT research (Lee 2007). The 'other half' of the story about the dead animals in Star and Griesemer's account, the one that we may miss out on, is that specimens become represented through intricate standards as objects of professional science. Rather than having states, as boundary objects, a different account could be given of the processes by which, imperfectly and by means of exchange and compromise, amateurs and professionals translated the dead animals into specimens and samples. One can also argue that the museum itself is a complex compromise, a site and a process of compromising and negotiating. Those pioneering professional zoologists might feasibly have adopted a process analogous to questionnaire and gone into the field, bringing back pieces of paper to represent the animals. Instead, the professional zoologists hired the contextual experts, including trappers, land owners and amateur conservationists, to bring bits of the field into the museum, for the "paper-work" of zoological science to begin there and

then. The general lesson is that there may well be a number of interessements, of trying to acquire a capacity to act. If domination or standardization is occurring, it is a process, probably a fragile one that requires great resources and much work with and around setting and maintaining the boundaries across which the 'boundary object' is supposed to act, and we should know about it.

Significantly for any further summoning of the concept of boundary objects in market studies, researchers have started to highlight that the 'possibilities and transitions' (Engeström and Blackler, 2005, p. 326) inherent in the object imply that the object is partially shared, fragmented and often disputed during its movements by those with interests in it. Sapsed and Salter (2004, p. 1531) demonstrate that without a willingness to engage with, negotiate and maintain the boundary object on the part of all workgroups involved, it is often of limited use: "Boundary objects, because of their marginal nature, are prone to be relegated to the edge of projects, which is after all where they belong." In a similar vein, Bechky (2003b) provides a nuanced account of situations in which boundary objects become manifest because they establish a common ground that can support shared understanding, but warns that at the same time the boundary objects can also act as considerable constraints, inscribing not only knowledge but also social relations, power, legitimacy and actions. Bechky concludes that boundary objects are themselves vulnerable to dispute, negotiation and renegotiation between members of different communities. The constraining or 'conscriptive' quality of boundary objects also emerges in Henderson's (1991) account of how visual representations, once reified, become controlling of the practices they are supposed to translate to others. Focusing on the lack of standardized modes of interaction in functional collaboration around a temporary natural history exhibition, Lee (2007) illustrates much 'contested collaboration' around artifacts, which she categorises as 'boundary negotiation devices'.

Law and Singleton (2005) propose a development of boundary objects, which we argue is also of some interest to market studies researchers. Following Law and Singleton, the concept of boundary objects is epistemic because objects can be more or less successful in stabilising the interactions between actors involved in different activities. They contrast an epistemic version of objects with an ontological one. Drawing on Mol (1999, 2003), Law and Singleton argue that objects have trajectories as they move through different sets of connections, interactions and relationships. Their example is of acute liver disease, which they follow in different settings of health care, from a specialist hospital ward, to a general practitioner's surgery, to a support group for alcoholics. The diseased liver acquires different identities, names and social status as it establishes different sets of connections in these settings. Rather than boundary objects, which seem to be stable and cool, Law and Singleton point to hot and even fiery objects that are complex because they continuously change shape in their use across different sites.

If seen as boundary objects, marketing objects are supposed to enable market exchanges through facilitating connections; the 'material', or 'immutable', nature of these objects acts as a fixed point that helps market actors settle, even temporarily, on a set of standards of, for instance, which connections count, how they are qualified, how exchange should proceed. 'Cooling down' or settling and immutability are therefore co-constituting; an object that is more than one at once or that remains heavily disputed is not immutable and does not serve to establish standards (of comparison, of exchange, of pricing, of meanings).

To summarise this review, enough evidence has been accumulated to question the usefulness of the boundary object concept if it is divorced from its twin component of standardization, and so the down-playing of the questions of contest, power and interessement, capacities to act, and the immutability, mobility and combination of objects. We now move on to address this paper's aim, of identifying what boundary work needs to be

invested in order to give boundary objects in markets their 'immutable mobility', and by whom. This has a particular and under-researched resonance in marketing, which has traditionally shied away from exploring issues of contest and conscription (Araujo and Kjellberg, 2009).

A pill for every ill – objects and pharmaceutical markets

In the following section, we investigate the role of the boundary object in markets through two caselets from the pharmaceutical market realm. Pharmaceutical markets are particularly interesting empirical terrains to explore the questions raised in the preceding section, on the role of the object in markets, for three reasons.

First, medical sociology has converged in recent years upon a social constructionist perspective on the concepts of 'illness' and 'health' (Brown, 1995). This perspective emphasises that medical markets or not necessarily 'natural', pre-given or ready-made entities into which pharmaceutical companies launch their products, but subject to intervention and, perhaps, invention by market actors with an interest in the existence and shape of a particular market.

Second, the existence and diversity of interest of market actors may be more apparent in medical markets than in many other markets, which means that there may be an opportunity to observe a lot of boundary work and struggles over legitimacy and power. Pharmaceutical firms, the medical fraternity, third party payers, regulators, individual consumers, courts and patient groups all contribute actively to the existence and shaping of these markets and can, at times, form various alliances to pursue their individual and some shared goals (Conrad and Leiter, 2004). This means that there is likely to be a lot of work at

the level of 'interessement'. Because medical markets are generally regulated, such work is likely to also leave visible and documented traces.

Third, the medical arena is one of the domains in which the 'logic of the market' (Venkatesh, Peñalosa and Firat, 2006) has only quite recently penetrated, expanding the potential for actors to collaborate, coalesce and confront each other over the right or not of a particular market to exist. Conrad and Leiter (2004) examine four recently 'made' markets (for Viagra, Paxil, Human Growth Hormone and In Vitro Fertilization); they trace whether these markets made through 'supply' or through 'demand' and how individual market actors attempt to establish legitimacy for the existence of a particular market. While not framed in terms of boundary work, these four accounts afford the reader a glimpse of the jostling and negotiating involved in some medical markets. It is noteworthy, however, that in Conrad and Leiter's account the object – or what the market is 'for' and whose constituency it may fall in – appears to be remarkably passive, despite their acknowledgement that in some cases, such as Ritalin and Attention Deficit Hyperactivity Disorder, the development of the cure contributed strongly to the redefinition of the disease. In what follows we challenge that manner of accounting for medical market making through passive, rather than active, objects while continuing and deepening Conrad and Leiter's attempts at tracing the diverse, political and often controversial boundary work in medical markets.[1]

The object that did not make the market: Caselet 1

The Northern Irish pharmaceutical company Warner Chilcott (formerly Galen Holdings) owns a product that could have made a market not much like anything the pharmaceutical

[1] Brennan, Eagle and Rice (2010) discuss in detail the contribution of marketing and the potential ethical, economic and societal consequences of the medicalization of an increasing number of human domains, to a point where only a minority of people can be considered 'normal' or 'disease-free'.

world has seen before. The market was for a treatment of severe Premenstrual Syndrome (PMS), or Premenstrual Dysphoric Disorder (PMDD), sized at about three to eight percent of menstrual women world-wide. Surprisingly, this product did not succeed in capturing the market it was expected to deliver on. Its history, however, is one that is imprinted with traces of its makers' (ultimately failed) attempts at creating and growing this market, and the role of the object in carrying and translating this work.

The object in question is the drug Sarafem, developed and first owned by Eli Lilly. In official accounts, this object's market career is quickly told. Sarafem saw the light of day in 2000 when it was launched in the US as the first drug to achieve FDA approval for treating PMDD. Despite optimistic forecasts and a promotional campaign directed at consumers, including interactive media and television advertisements, Eli Lilly did not achieve its growth targets for Sarafem. Between 2001 and 2003, sales hovered between $30 and $70 mio. In 2003, Eli Lilly sold the brand to Galen Holdings (now Warner Chilcott) for $295 mio. (Murra-Est 2002) but continued to manufacture the product for them. After its patent extension expired in 2007, Teva Plc gained approval for a generic version of Sarafem as PMDD treatment (having manufactured a generic version of Prozac since 2001 and unsuccessfully fought Sarafem's exclusivity extension in court against Eli Lilly in 2003). As a consequence, Warner Chilcott's sales of Sarafem dropped by 50 percent from $37.7 mio to 16.9 mio from 2007 to 2008 (Warner Chilcott Annual Report 2008).

Told as a short story, Sarafem is a rather typical marketing tale of an existing product that was rebranded and (rather unsuccessfully) deployed in a new market. The long story, however, bears witness of just how much (boundary) work was undertaken to do so. Sarafem dates back to two contested socio-medical developments: whether hormonal effects during women's menstrual cycles should be considered an affliction and thus treated medically (Caplan 2004), and to the advent of the 'neurochemical self', or "the belief that variations in

neurochemistry underlie variations in thought, mood and behaviour, and that these can be modulated with drugs" (Rose 2003, p. 46). Although disputed in feminist and political circles and described as a form of social control over women by psychiatrists (Brown, 1995), the former development eventually led to the inclusion of PMDD into the bible of psycho-pharmacology, the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders IV (APA DSM),* in 1994. Inclusion was in a novel and specially created appendix for "categories requiring further study", but crucially with a code that would allow reimbursement for any treatment sought by health insurances.[2]

The latter development, of the neuro-chemical self, is associated with new kinds of antidepressants such as the Selective Serotonin Reuptake Inhibitors (SSRIs), as with the first of its kind Prozac, owned and developed by Eli Lilly and launched in 1987. With Prozac, Eli Lilly discovered that this product's market potential could surpass the psychiatric market it had originally been aimed toward. Eli Lilly changed its marketing strategy to targeting general physicians rather than psychiatric consultants, together with a large-scale educational campaign on depression aimed at primary health carers and the general public. The modest sales targets of $70 mio. annually originally projected for this product were transformed into multi-billion annual sales peaking at $2.6 bn in 1999 (Szegedy-Maszak, 2001), and into something of a cultural revolution.[3]

By the year 2000, Eli Lilly faced the loss of its Prozac patent, due to expire in mid-2001, and the threat of cheaper and equally efficient generic versions of Prozac's active ingredient, fluoxetine hydrochloride. Throughout the 1990s, Eli Lilly had sought approval from the US Federal Drugs Agency (FDA) for a number of other indications for fluoxetine

[2] Both Caplan (2004) and Greenslit (2005) provide stimulating accounts of this techno-scientific process, in which pharmaceutical companies played a considerable role.

[3] The Prozac phenomenon has been told in numerous academic and media accounts, although this story itself could be retold as a tale of the making of a standardised object, depression.

hydrochloride. In 2000 it was the first company to receive FDA approval and a patent extension of seven years for the use of this compound for PMDD in a rebranded but otherwise identical version of Prozac called Sarafem. This approval is the tangible outcome of years of boundary work by Eli Lilly helping to have PMDD recognised as a real disease and as a mental, rather than physical disease. According to Paula Caplan, one of the members of the APA DSM subcommittee that had considered the inclusion of PMDD into the DSM, Eli Lilly brought FDA members together in a roundtable discussion in 1999 where Prozac was presented as an effective solution to PMDD. The logic being that if a solution can be presented to a problem, the problem surely must be real (Caplan 2004). Eli Lilly also had a hand in supporting mental health researchers against their gynaecological counterparts in the contest over whose jurisdiction PMDD, if it were recognized as a disease, would fall into. A move to include PMDD into the World Health Organisation's *International Classification on Disease* as a 'disorder of the feminine genital tract' was eventually rejected (Figert 1996), partly based on the evidence that fluoxetine was a successful treatment[4]. Again, this indicated that if a mental health drug could improve the symptoms of the disease, it must be a mental rather than physical problem.

So, by mid-2000, PMDD had been given the all important code in the DSM and therefore made reimbursable[5], it had been given official status as a mental disease (something many women's rights groups felt deeply aggrieved with; see Caplan 2004), and Prozac, now rebranded as Sarafem and coloured in a feminine pink and lavender hue, had been given a patent extension of seven years in the US by the FDA. The market was envisaged, its entities stabilised and ready for the launch of this drug. One of the first US TV advertisements by Eli

[4] Success in this case indicated an improvement rate of around 50-65% (Steiner et al. 1995; Endicott et al. 1999).

[5] One may wish to notice the role of these codes as market devices.

Lilly featured an exacerbated woman trying to untangle a shopping trolley from a line of others outside a supermarket, with the tag line "Think it's PMS? Think again – it could be PMDD". While Eli Lilly eventually received a warning letter from the FDA on the basis that this advertisement trivialized PMDD and made it indistinguishable from 'normal' PMS, subsequent advertisements continued in a similar vein.[6]

As mentioned, the Prozac-Sarafem relaunch seems like a classical marketing piece of rebranding and repositioning an existing product for a new market segment. As a proto-boundary object the product shows an important twist to this conventional marketing tale: namely the 'othering' of Prozac in order to successfully sell its feminine *alter ego* Sarafem. Fluoxetine had been used extensively as a potential cure to legitimize this disease in the first place, and give it a mental, rather than physical, focus. Now, however, an association with depression could potentially frighten away a broad mass market of premenstrual women. In Eli Lilly marketing manager Laura Miller's words:

> "We asked women and physicians, and they told us that they wanted a treatment with its own identity .... Women do not look at their symptoms as a depression, and PMDD is not depression but a separate clinical entity. Prozac is one of the more famous pharmaceutical trademarks and is closely associated with depression". (reported in Vedantam 2001).

Indeed, so successful was their 'othering' of Prozac in the rebranding and marketing of Sarafem that nursing journals reported stories of double dosing of patients with Prozac by their GP and Sarafem by their gynaecologist (Karch and Karch 2002). Consumer information on Lilly's 2001 Sarafem website read: "What is the active ingredient in Sarafem? Sarafem

[6] These tag lines point toward the work that needed to be undertaken to educate consumers to distinguish the 'normal' from the 'abnormal', which may needed to be treated through a pharmaceutical product, which is a related case of 'othering' to the one described in this paper in the product realm.

contains fluoxetine hydrochloride, the same active ingredient found in Prozac." (reported in Greenslit, 2005). As Greenslit indicates, this statement does not acknowledge that Sarafem and Prozac are exactly the same drugs, and indeed, for many women taking Sarafem, they probably were not, at least in symbolic terms:

> "Sarafem contains the same active ingredient as Prozac". When I first heard this statement, sitting in my living room wiping the tears away after some sappy-ass mini-series, it didn't sound so bad. I figured Sarafem must be diluted with a milder medicine, made in a lesser dose and/or taken less frequently. Certainly they wouldn't prescribe Prozac for PMS. But it turns out that's exactly what Eli Lilly has done. The company changed the color of the pill from green to girly pink and turned the depression-stigmatized label Prozac to the oh-so-feminine name Sarafem. Yet Sarafem/Prozac both require daily 20 mg. doses of fluoxetine hydrochloride. You don't take Sarafem any less often. You don't take it any smaller doses. (www.alternet.org/module/printversion/11004)

This excerpt from a 2001 blog on AlterNet entitled "Sarafem: The Pimping of Prozac for PMS" indicates that while in its boundary work with the market, Eli Lilly had worked hard to create two entirely different entities for Prozac and Sarafem, the object's transformation had not been complete. In the end-users' eyes and despite much work at the symbolic level, Sarafem never completely stepped out of its Prozac shadows. Media reports on this 'othering' of Prozac abounded and were quickly judged as a sly marketing ploy. Headlines included "Sarafem Nation: Renamed Prozac Targets Huge Market: Premenstrual Women" (Spartos 2000), "Renamed Prozac Fuels Women's Health Debate" (Vedantam 2001), "Born-Again Prozac: Not Worth the Extra Cost" (Napoli 2001) and many others. Even competitors contested that the difference between Prozac and Sarafem was such that it warranted a regulatory patent extension. The new market that Sarafem was supposed to create could never

step out of Prozac's old market. Othering failed. From a biomedical perspective, Kaapen and Weisz (2008, p. 131) concluded their historiography of PMS research by stating that

> ...the appearance of PMDD in the DSM and the medical literature has not established a distinct new psychiatric entity management by psychiatrists. Its inclusion in the DSM has not fully standardised diagnosis and drug use in daily practice but has rather standardised recruitment for and execution of clinical trials, at least in North America.

From a market perspective, the $295 mio. purchase of Sarafem by Warner Chilcott met with an approximately $35-40 mio. sale of the drug between 2004 and 2007, diminishing by at least half in 2008 when the patent extension expired. Much money, a disease and an object a (successful) market did not make.

The Markets that Shaped the Object: Caselet 2

This second caselet is about ProStrakan, which is by the standards of the pharmaceuticals industry a small and specialist pharmaceuticals company, based in Galashiels in the Scottish Borders and with another office in Bedminster, New Jersey. It employs around 250 people, reported an annual revenue of £79 millions in 2009 and an operating loss of £9.6 millions for the same year. The company was founded in 1995, becoming a public limited company in 2005. Its operating losses are reducing year on year, in a way consistent with investors' expectations. It lists 28 products on its web site and markets its products internationally. ProStrakan is part of a growing movement of pharmaceuticals companies, to include Warner Chilcott, that develop markets for established drugs, often by developing novel and patented ways of administering that drug. In this case, we will focus on a drug that ProStrakan is selling in the USA, called Sancuso, which patients take to alleviate vomiting after chemotherapy. The drug is administered through a transdermal patch.

Of particular importance to the present paper, ProStrakan acts in three markets simultaneously: a market that involves patients and their professional intermediaries, such as GPs, health insurance companies, and national health services; a peer-to-peer market for the in and out-licensing of drugs, in which pharmaceuticals companies exchange the rights to drugs, for instance to develop a portfolio of products in related areas of treatments, or to use another companies' marketing, sales and distribution capacities; and a market for different types of finance, to match the companies' development from start up to public limited company. The first two categories of market are of interest in the present paper. The case of Sancuso is interesting as it indicates that companies can take actions in altering and repositioning a drug, a marketing object, and at the same time develop a market.

The active ingredient in Sancuso is granisetron, which was developed at Beecham in the late 1980s. The drug was developed as tablet by Genentech, which is part of Roche. Genentech continues to market the table under the name Kytril and generic versions of the drug are available since it is now out of patent. Granisetron remains in the body for fairly long periods of time and the advantage of administering it by an adhesive or transdermal patch is that the drug is released slowly, with one patch being effective for five days. ProStrakan received approval from the US Federal Drugs Agency to market Sancuso in 2008 and ProStrakan has patented the transdermal patch, which is the drug's delivery system. In ProStrakan's annual report, the company states that it took five years to develop Sancuso, from initial informal discussions in the company to receiving approval from the US FDA.

The crucial dimensions of the object in ProStrakan's marketing and sales activities are its convenience and effectiveness in administering the drug relative to the tablet form. Hence, it is easy for patients and their doctors to administer in the stressful conditions immediately after chemotherapy. ProStrakan captures this in its annual report, as being an instance of a 'patient friendly focus'. Further, as a company, and as with companies

following a similar business model, ProStrakan makes much of its knowledge of the settings of patient care and designing new technologies for administering drugs rather than for developing drugs per se.

Discussion: (Market) presence depends upon (market) absence[7]

Even today, after years of stagnant and falling sales, the makers of Sarafem feel the need to 'other' their brand from depression generally and from Prozac specifically. As of March 2010, Warner Chilcott's Sarafem website reads "Although Sarafem is not a treatment for depression, it contains fluoxetine hydrochloride, the same active ingredient in some antidepressants." This statement is followed by a lengthy (legally required) warning of the dangers of taking antidepressants, even though, as the website states, Sarafem is *not* an anti-depressant - or treatment for depression. Similarly, but less contentiously, ProStrakan issues a warning in its statement of Patient Information, that: 'Sancuso contains graniestron, the same medicine in Kytril. Do not take Kytril at the same time you use Sancuso ...'. But of course there are no problems in stating that Sancuso and Kytril (the tablet form) are the same treatment, but with a different means of application.

In Law and Singleton's (2005) words, Warner Chilcott's statement indicates a 'mess', if not ontologically, at least epistemologically speaking, and ProStrakan's is not. And mess does not make for good marketing objects. A boundary object should translate from one community (the regulator, who names and codes diseases for reimbursement and licenses drugs for those diseases) to another (a pharmaceutical company, who simultaneously helps establish the disease and hunts for cures for that disease) to another (the GP, who diagnoses the disease and prescribes the pill) to another (the end user, who takes the pill to combat the disease), establishing and corroborating standards for doing all of these activities along the

[7] We apologise to Law and Singleton (2005, p. 342) for this paraphrasing.

way, and thus smoothing potential contest out of the market interaction. Instead, if a premenstrual woman seeks help from her medical practitioner or from the web, and if this medical practitioner or a website directs her toward an antidepressant, that, well, isn't really one, aimed at something that is classified as depressive disorder in the *DSM* but isn't really one (the Sarafem website assures the woman that "PMDD is a distinct medical condition"), charging the potential patient a price for a product that differentiates itself from and costs a multiple of, but pharmacologically is the same as, generic fluoxetine, then there is mess. If, in addition, the woman lives in Europe, she will be told that in her jurisdiction, the pill is treating a disease that does not even exist – things get even messier. In this case, the marketing object has failed to act as a boundary object should.

Objects should allow marketers to cool contestation and negotiation down, to stabilise and, through their qualification work, establish standards of comparison and calculation. Marketers do not like to handle hot objects, where boundaries and standards remain unsettled. For objects to be cool, and to cool down the market setting, there needs to be a clean break to other objects – the object needs to be 'immutable' (Latour 1987). In a previous paper (authors, forthcoming), we made the point that in order to act as a boundary object, the market good needed to be 'othered' from its *alter ego* in the market trajectory, the consumption (or production) product. We also pointed out that while marketers attempt to 'cut the network' in the market space in their positioning work, they simultaneously invoke the 'other' (the object's previous and 'after'-life) at a symbolic level. They can never unsettle the market good too much, however, or they risk breaking down the boundaries a market needs in order to function, so they keep the object just 'cool enough' to handle (but with 'warm' edges).

The argument we make here moves on from that point. We argue that the Sarafem case demonstrates a case where the object refused to be cooled down: a case of disputed

standards, of categories that cannot be settled down because they are actively contested, of objects that cannot be separated clearly from their 'others' in other markets; a case where, therefore, boundaries could not be clearly drawn between those different markets (and the new market could never be properly established as a consequence).[8]

Engeström and Blackler (2005, 318) state that stabililization "involves separating the object from its background, giving shape to and defining the object as an identifiable entity". In our first caselet, Eli Lilly was faced with a dual stabilization problem: both the disease and the cure needed to be categorised and, through this categorisation, 'othered'; the former from its 'normal' other PMS, from other depressive diseases, and even from 'part of being a woman' (Sarafem website)[9], the latter from its *alter ego* Prozac and its generic twins. At least in Europe, Lilly failed in doing either. In 2003, the European Agency for the Evaluation of Medicinal Products decreed that "PMDD is not a well-established disease entity across Europe" (cited in Knaapen and Weisz 2008) and thus rejected both the disease and its potential solution in the shape of Sarafem. In the US, while the initial othering was successful, at least in relation to the regulator (PMDD was recognised as a separate, and coded, disease), the othering of the market object failed. It failed because Eli Lilly's previous work in connecting (attaching) PMDD to fluoxetine specifically and to depressive disorders in general now came back to haunt them in two ways. Not only did this initial attachment work make it impossible to subsequently detach the object from its progenitor Prozac and thus justify the price premium charged, it also contaminated both the solution and the problem it was designed for. It seems that despite Eli Lilly's claims that 'PMDD wasn't

[8] Unlike in authors (forthcoming), the 'cooling down' and 'othering' here is lateral, so to speak, in relation to other markets and other market objects, and not vertical, in relation to an object's downstream trajectory from production to market to consumption. This goes to show that there are many potential 'others' looming in the shadows of a market object, whose absence need to be assured to keep things cool.

[9] Brennan, Eagle and Rice (2010) have recently discussed the potential societal consequences of such medicalization efforts through marketers.

depression' this association made it difficult to convince women and primary care givers to accept PMDD as a condition.

In contrast, ProStrakan never needed to fully 'other' its object Sancuso from its progenitor Kytril to cool its market setting. Sancuso was a development of Kytril, or as an object, something of an evolutionary step. It never needed to hide its origin, but could instead point to its difference (and evolutionary advantage), which is a much cleaner way of 'othering' through qualification, rather than denial. Both our cases raise the question of how drugs with similar ingredients are made distinct from one another, of how companies can by means of a new product relate to the earlier version as an other. Eli Lilly embarked upon a series of elaborate actions to other Prozac and its associations with depression from Sarafem, but could not prevent the two re-entering a shared space in connection with its common formulation of fluoxetine. ProStrakan was successful in othering Sancuso from Kytril despite their common formulation of granisetron.

Quattrone (2006) develops an argument about othering based on testimony and case studies, arguing that case studies cannot be considered epistemically but, rather, are moral endeavours, especially as they address different interests. We draw the parallel between the researchers' endeavours in writing case studies and the two pharmaceuticals companies' attempts at making new markets. Both have the quality of beginning as empty spaces, becoming partially filled by that case's or objects' relationships with those others that cannot enter the case or market space. Hence, a case study creates and can only partially occupy a discursive space, for example, as a testimony, because its researchers or narrators cannot bring the case phenomenon with them. The case must make an other of those involved in the case's phenomenon and for that matter of its intended and interested audiences, including, presumably, those involved directly in the case. If those involved in the case's phenomenon do enter the case study's space, their stronger or more compelling, if implicit, claims to

authenticity threaten the testimony of the researcher or narrator, who would otherwise be speaking on their behalf, or representing them. Because case studies are not matters of epistemics, because there are no ways to assess the validity of a case without calling the case's phenomena into the case's discursive space, so destroying the case study by undermining the claims of authenticity and testimony made or implied by the researcher or narrator, Quattrone argues that case studies are intrinsically ethical and moral. The ethical and moral quality of cases is intensified by their capacity to address and develop interests among audiences.

Quattrone's argument relates clearly to three themes emerging from our review of the literature on boundary objects. He interprets interests, as 'inter esse', to mean 'being among human beings' (2006, p. 152). First, there are clear parallels here with Star and Griesemer's (1989) dispute with Callon, Latour and Law as to whether the latter have a 'uni-directional model' of interressement, which professional scientists can dominate too easily, and their proposal of an n-dimensional ecology in which actors, rather than actant, already have the capacity of agency. Second, Quattrone's emphasis on the ethical and moral qualities of case studies, on account of the impossibility of epistemic qualities, has parallels with Law and Singleton's (2005) argument that boundary objects have ontological rather than epistemic qualities. Third, we can consider how standards are involved in but do not resolve the question of othering, in terms of actors' translating work in moving entities between contexts. Hence, standards and regulations – as with the US FDA – are in part ways of cooling down the interests of others, not so much in comparing entities such as pharmaceuticals products, or case studies and their referent, but of demonstrating and perhaps certifying that there is a difference.

It is interesting that Eli Lilly's attempts to prove difference between Prozac and Sarafem, despite the common formulation of fluoxetine reflected the classic marketing idea

of segmenting users within groups by establishing separate needs, such that PMDD is other than PMS, and further that PMDD (as associated with Sartafem) is other than depression (as associated with Prozac). The failure of this approach turned on the ontological or material matter of the common formulation, which was initially an epistemic matter and which undermined the moral and ethical authority of the producer's testimony of difference. By contrast, ProStrakan was able to demonstrate the advantage of its application technology, the transdermal patch, for an established pharmaceutical formulation, granisetron. The material difference of the patch was enough to keep the tablet version of the product as an other, with the differences being, especially for a medical perspective, perhaps subjective things like convenience of use for both medics and patients. ProStrakan can then retain its moral and ethical authority, or its testimony, of developing technologies and techniques often in application for the benefits of patients.

Our final point is a reflection on materiality. In both our cases, as in some of the recent applications of boundary research in organizational settings (Bechky, 2003b; Sapsed and Salter, 2004), the materiality of the pharmaceuticals products proved to be both obdurate and complex as the companies attempted to invoke othering and so clear a (market) space to be filled by their new offers. Eli Lilly undertook a considerable amount of work in order to communicate and translate Prozac and fluoxetine into Sarafem. It made a moral and ethical claim, authoritatively and in a regulated and scientific setting that it could help women by articulating different benefits of Prozac. But the shared materiality on fluoxetine proved to be an obdurate quality of their narration. The materiality of ProStrakan's Sancuso product benefitted from the combination of two well-established and stable technologies that were familiar to medics and to patients, and that supported Sancuso's claim of being an other.

Conclusions

If taken for granted, boundary objects – or material objects in markets – are not particularly interesting. What is interesting, however, is to trace the activities, contests and negotiations that have led to an object's "for-grantedness", or, in other words, the processes which have allowed stabilization to occur in the first place. In this paper, we have presented two short cases taken from extant research that show how, in medical markets, stabilization is never easy to achieve, and objects themselves are often no easy means to do so. Examples are myriad, of pharmaceutical competitors contesting regulatory approvals or patent protection in court or of patient groups coalescing with or challenging commercial attempts at establishing markets, as was the case of our Sarafem example. Examples can also be of how the materiality of an object contributed to creating a market, as in the Sancuso example. What is essential, and what we want to draw market study researchers' attention toward, is behind every market object, there is much and often highly interesting market work.

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