The extended narrotype: adaptation and stasis in spatial evolution.

PRICE, Ilfryn and BEARD, Colin <http://orcid.org/0000-0002-3836-3072>

The extended narrotype: adaptation and stasis in spatial evolution.

Ilfryn Price and Colin Beard, Sheffield Business School, Sheffield Hallam University, City Campus, Sheffield, South Yorkshire, S1 1WB UK

Abstract

We present the proposition that features of work spaces, in both learning spaces and offices, might be considered as the memetic or linguistic analogue of extended phenotypes. We demonstrate a synchronicity in theorising about, on the one hand processes of cognition and learning, and on the other about the design of physical space in our two chosen contexts. The actual physical expression lags the theory in both because, we argue, it reflects the narratives of both powerful occupiers of the space and the professional departments responsible for provision of same.

The results are compatible with, and an independent argument for, a 'narrative ecology' perspective on organisations. Our intention here is the theory however the results have relevance both to accelerating learning and democratizing management. They argue for the spatial dimension to organisational studies as a subset of research and practice in organisational Darwinism.

Key words

Narrative ecology, work space, extended phenotype, narrotype

Introduction

'First we shape our buildings then they shape us' (Churchill , 1943)

The case, or cases, for Generalized Darwinism or Organisational Evolution still rest largely on analogic reasoning (Toulmin, 1972; Ruse, 1986). Our purpose here is to examine an extension of such reasoning by comparing Dawkins's (1983) Extended Phenotype (EP) with physical spaces in two settings, universities and offices. Using historical comparisons we build a case for historic narratives influencing spatial expressions in both settings. In the process we seek to add to the case (Price, 1995) that stasis is present in cultural evolution (Distin, 2010) as much as in biotic (Eldredge and Gould, 1972; Ager, 1972; Wake, Roth & Wake, 1983). In the process we hope to make the case for including studies of physical space within evolutionary approaches to organizations.

We start with brief summaries of the concept of EP, and our theoretical stance on cultural evolution then proceed by examining a synchronous 'evolution[1]' we observe in theorising concerning processes of cognition and learning and theory and practice concerning work spaces. Our inquiry into the two histories arose from our exploring potential lessons for workspace practice offered by experience of spatially mediated development events (Beard and Price, 2010). We discovered, in both, theory moving towards what might be called, in the spirit of this conference, democratising spaces; but practice, reflecting dominant narratives, lagging considerably.

Extended phenotypes

The language of evolution, ecology and selection is well established in organisational studies; albeit rejected by many and differently nuanced in different communities of study (Breslin,

[1] In the soft sense of development

2011; Price, 2012a). Many metaphors from the natural sciences[2] have found their way into organisational writing either in a search for analogy or an attempt to generalise a Darwinian approach to two complex systems, biotic and abiotic. One that has not is Dawkins's EP despite his remark, in a 21st anniversary discussion of the book of that name, in *Biology and Philosophy*

> Extended phenotypes are worthy of the name only if they are candidate adaptations for the benefit of alleles responsible for variations in them. I might admit the theoretical possibility of generalising to other kinds of replicators such as memes, in which case my 'no' answer might be softened. But it is enough of a problem already, getting my more hard-headed scientific colleagues to accept the extended phenotype, without arousing their active hostility by mentioning memes (which many see as simplistic) or 'epigenetic inheritance systems' (which some might write off as obscurantist). Dawkins (2004 377)

He was responding to various discussants of EP and specifically in the cited passage to Laland's (2004) suggestion that niche construction in a broad sense was an extension of EP theory. Dawkins's main point was that much niche construction, while it does modify the selection environment, does not benefit the alleles responsible. Hence he argued the classic EP, the beaver's dam, is built for the benefit of beaver genes whereas say the production of soil by earthworms or the microbial oxygenation of the early Proterozoic atmosphere are by-products of evolution that, while they changed the selection environment dramatically, did not benefit the replicators concerned. In an ontic dump (see Price, 2012a) that proved less fecund than many of his coinings Dawkins sought to distinguish true niche construction from mere niche changing.

Constructed structures -- beavers' dams, termites' nests or indeed birds' – form a large class of EPs though Dawkins (op cit.) was at pains to exclude coral reefs. Our purpose here thus becomes a test of the argument, hinted at by the Churchillian quote above, that at least some constructed cultural spaces are candidates for recognition as a cultural EP.

---

[2] By which we mean, contra much social science practice, here the biology and earth science rather than chemistry or physics

Narrative evolution

It has become conventional in organisational studies to separate research methodologies into quantitative, usually bracketed as hypothetico-deductive, and qualitative, usually bracketed as interpretive. The former, generations of students are told, is the method of the natural sciences. Does that assertion always hold up? The quintessential natural science case of Darwin's *Origin of Species* can be seen (Mayr, 1991) as one long, interpretive argument marshalling observation after observation (Ruse's 1986 consilience) to establish the case for the process of Natural Selection. Much, albeit not all, subsequent confirmation has remained interpretive. The movement for generalising Darwinism to culture follows a similar path. It remains largely interpretive even when case studies accumulate.

Within that movement are several variants on the theme of what, if anything, is selected and the nature of the selection process (Abatecola,et al. 2013). Readers of this paper are likely to be familiar with the broad division between the school who see 'routines and competencies' selected by broadly conscious human agents (Toulmin, 1982; Hull, 1988[3]) and those who see conventional wisdoms (Waddington, 1976), modes of thought (Weeks and Galunic, 2003) or linguistic representations (Distin, 2010) replicated via the structures they enable. We would broadly align with the second position viewing organisations as "intra organizational ecologies" (sensu Weeks and Galunic) with their 'modes of thought' being social or representational constructs.

As Langrish (2004) appears to have been the first recent writer to note, the concept was anticipated by Darwin himself, not in *The Origin of Species* but in his later (Darwin, 1871)

[3] Hull is well aware of what he terms the internalist and externalist perspectives on scientific inquiry but locates himself as internalist given his audience yet he shows, in an early exposition of science as an evolutionary epistemology, how the social phenomena cited by the externalists are consistent with the evoluionary process.

work *The Descent of Man*; a volume that arguably usurps social construction and post modernism by a century and gives them, ironically for social scientists of a certain disposition, a 'Darwinian' twist. Darwin's thesis began with humans', innate capacity to learn language and hence enable complex thought and the emergence of common rules of behaviour. Price (2012a, 2012b) elaborates. What we are then testing here is whether constructed spaces can be seen as extensions of, and contributions to the replication of dominant narratives.[4]

Our historical comparison

A brief review of learning and cognition

Theorising about how adults learn has been subject to a continued quest for more 'complete' ideas. The early 20th century's dominant, behaviourist view, was linked to, and associated with, a Western approach and operant conditioning (Pavlov 1927, Skinner, 1974). That animalistic, ethological focus gradually shifted as cognitivist theories began to surface in the late 1950s. Major contributors included Lewin (1951) and Gagne (1974), but perhaps the most well-known was Bloom (1956), who developed a spatial hierarchy of cognition (higher/lower forms). Seeing the 'human' as unique, intelligent and rational, the cognitive focus alluded to the computational processing of thinking, remembering, analysing and seeking ways to explain and make sense of the world.

By the late 1960s humanist theories were emphasising personal agency and the fulfilment of potential. Arguably the seminal text was Carl Rogers's (1969) *Freedom to Learn*, which expressed a liberating metaphor. For Rogers feelings, warmth, acceptance and the nurturing of people were central to learning: individuals, if treated in the right way, had it within

[4] Our other concern that the spaces thus constructed impede or retard learning is dealt with separately (Beard and Price, 2012: 2013)

themselves to work towards solutions to problems. These ideas were instrumental in the development of learner centred methods.

Cultural and social context became increasingly recognised as important (e.g. Vygotsky, 1978) giving rise to a range of social constructivist theories, with learning seen as active and contextualised. Learners were seen as constructing knowledge not only for themselves, as individuals, but also through social interaction. Whilst social constructivist theories remain influential they are now positioned among a milieu of views about human learning, as illustrated in the unearthing of the role of hidden desires and fears by psychoanalytic theories (Britzman, 1998); the questioning of a monolithic notion of a single intelligence (Gardner, 1983); advances in neuroscience leading to a reassessment of biological determinism (Edelman, 1992; Damasio, 1995); and a widening recognition of the role of embodiment in learning (Lakoff and Johnson, 1999; Sheets-Johnstone, 2009). Corporeal metaphors are deeply embedded in descriptions of cognitive processes viz: I see what you mean; we grasp the notion of; scratching the surface; step by step logic; support in the form of; decisions hurried (pushed) through; pressure from. Many others have contributed to this cognitive science, particularly a constitutional rather than causal (Shapiro, 2011) understanding of embodied and environmentally embedded cognition (for a summary also see Clark, 2008). The role of the senses (Abram, 1997), and specifically bodily gestures (Gallagher, 2005) and the emotions (Illeris, 2002), all receive attention in a search for new meaning about how humans learn. Such diverse thinking illustrates the on-going search for more integrative and comprehensive explorations of learning within and across disciplines (Dillon, 2007), where the connective relationship between mind, body and the environment can be further explored.

We do not claim the historical sketch as a complete picture but it appears to chart a trajectory from ethology to ecology. Understanding of human learning shifts from animalistic simplicity, rooted in behavioural observation, predictability and control toward an increased awareness

that human dynamics are complex: a view often interpreted by the use *ecological* metaphors (Becker, 1990: Davis & Sumara, 1997: Sterling, 2001; 2003: Siemens, 2003). A symbolic representation of the trajectory (Figure 1) provided a convenient map against which to consider developments in spatial designs for learning and working. Davis and Sumara (112) explain ecological complexity, and suggest that all the contributing factors in any learning situation are

> ...intricately, ecologically, and complexly related. Both the cognizing agent and everything with which it is associated are in constant flux, each adapting to the other in the same way that the environment evolves simultaneously with the species that inhabit it.

<table>
<tr><td>Time Period</td><td></td><td>1900-1940s</td><td>1950s</td><td>1960s</td><td>1970s</td><td>1980s</td><td>1990s</td><td>2000</td></tr>
<tr><td rowspan="5">HUMAN LEARNING THEORIES</td><td>B</td><td colspan="7">BEHAVIOURAL (ethology, animal focus)</td></tr>
<tr><td></td><td>C</td><td colspan="6">COGNITIVE (computational brain)</td></tr>
<tr><td></td><td></td><td>H</td><td colspan="5">HUMANIST (empathy nurturing)</td></tr>
<tr><td></td><td></td><td></td><td>S</td><td colspan="4">SOCIAL CONSTRUCTION of knowledge (social interaction)</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>E</td><td colspan="2">Rich ECOLOGICAL (complexity)</td></tr>
</table>

Figure 1: A brief and simplified history of theories of cognition.

Siemens (2003) similarly employed ecological metaphors to explore complexity, suggesting that a learning ecology is an 'open system, dynamic and interdependent, diverse, partially self-organising, adaptive and fragile' - one which includes: 'a collection of overlapping communities of interest; cross pollination with each other; and in constant evolution' (Siemens, 2003 quoted in Thomas: p. 508). Siemens also argues for 'connectivism' as a learning theory for the digital age, rooted in chaos, networks and complexity, declaring that "learning thus defined takes place in a learning ecology that 'fosters and supports' the creation of communities and that is consistent with …how learners learn" (op cit.). Furthermore, One

might think that learning and working environment in HEIs would reflect this complex ecology as suggested by ambitious, conceptually expanding definitions of 'learning environments' as:

> A sufficiently diverse and varied, physical or virtual, natural or artificial place and/or space that, wherever and whenever, can facilitate and engage people in the wide range of learning activities, through connectivity and community, cultivating and sustaining psychological, intellectual, emotional, social and political development (Beard, 2009: 184)

In practice however with the exception of learning centres exapted from former libraries (see below) traditional spatial arrangements prevail in both lecture theatres and seminar rooms. Students are seated in rows facing an instructor. The point is appreciated in pedagogic research. The author of the following passage (Chism, 2006) could have had the image we produce in Figure 2 in mind when she wrote:

> Advances in learning theory have clear implications for the ways in which learning most likely takes place. The emphasis today is on active construction of knowledge by the learner. The importance of prior experience, the fitting of knowledge into existing schema or the establishment of new schema, and the active processing of information are all components of this model that emphasize high learner involvement. Environments that provide experience, stimulate the senses, encourage the exchange of information, and offer opportunities for rehearsal, feedback, application, and transfer are most likely to support learning.
>
> Additionally, social constructivists point out that the social setting greatly influences learning. Picture the limitations of the standard classroom or study carrel in terms of these ideas. The decor is sterile and unstimulating; the seating arrangements rarely allow for peer-to-peer exchange; and the technology does not allow individual access to information as needed. Rather, the room supports a transmission theory whose built pedagogy says that one person will "transfer" information to others who will "take it in" at the same rate by focusing on the person at the front of the room. (p. 2.4 to 2.5)

The conceptual narrative concerning cognitive processes can be seen to have shifted. The spatial form has not. It retains a typology that is also found in early 20th century offices such as Lloyd-Wright's famous Larkin Building (see below). The similarity triggered our investigation of the history of theorising about workspace, given the BCHSE framework we had identified above.

Figure 2 New, but essentially sterile, pedagogic space favoured by 'efficiency' guidelines but also by much current practice.

Working spaces: a brief history of the office

Twenty years ago Peters (1992 413), writing under the banner of *Liberation Management* argued that:

> space management may well be the most ignored — and most powerful —tool for inducing culture change, speeding up innovation projects, and enhancing the learning process in far-flung organizations. While we fret ceaselessly about facilities issues such as office square footage allotted to various ranks, we all but ignore the key strategic issue — the parameters of intermingling.

Becker (1990) advanced similar arguments and also independently coined (Price, 2012a) the metaphor of 'organizational ecology' in an effort to portray the complex mix of people, technology and physical space in the developing workplace.

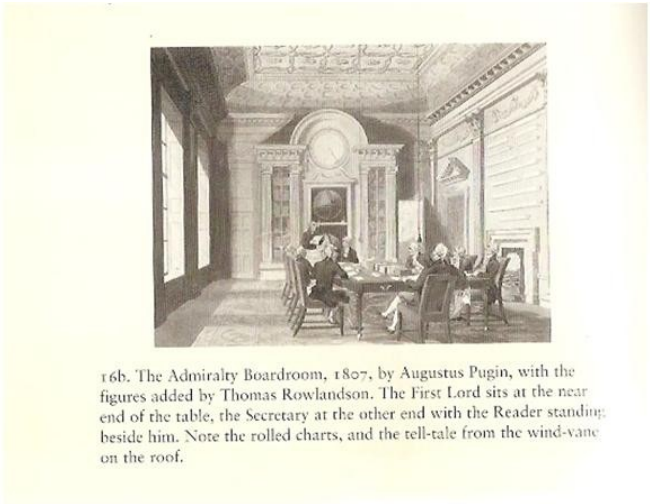
Twenty years after Peters, Myerson (2012) could make the point that in the last decade more flexible open offices have become the norm for knowledge intensive corporations. For him it was simply a competitive necessity. In like vein Vischer (2012) identifies the flexible and connected workspace as influential in the development of the social capital of successful organisations. Academe has by and large resisted the trend (Price and Fortune, 2008).

Reviews of the emergence of none manual work spaces typically start with the transaction processing needs of late nineteenth century industries. Arguably however offices are much

older. As special locations to conduct financial transactions they were a feature of early financial centres such as Venice or Florence (Ferguson, 2008). Specific spaces also provided adjuncts to administration in medieval palaces cells for learning and contemplation in monasteries and early universities (e.g. Myerson and Ross, 2006) or centres for administration of large pre-industrial enterprises such as British Navy (Rodger, 2004). The last example in particular contradicts conflation of rise of management and with rise of the mill. That said an office as an open, clerical factory did accompany the rise of industrial mills. As noted the Larkin Building has become the oft cited archetype (Sundstrom, 1986) with its overtones of the panopticon and the supervisor gazing down on the rows of workers arranged as manual, and stationary, automata. It is space that easily equates with a behaviouralist, in the Skinnerian sense, view of learning. As an aside (Figure 3) the admiralty boardroom a century before was arguably more democratic.

Later in the century the coincidence of economic revival, construction technology and reliable lift systems enabled the construction of taller office buildings. Managerial and supervisory offices grew in size and evolved into finely demarcated symbols of status captured, in what became an enduring metaphor, by the British novelist C. P. Snow (1964) as *Corridors of Power*[5]. The post-war period also saw the rise of professionals – cognitive workers - and their need, or demand, for their own offices.

[5] A classic novel of the period about the workings of the upper echelons of government in the UK. As a matter of fact exchanges in the actual corridors are a small part of the exercise of real power. Snow shows decisions made and rejected via is a rich ecology of conversations: formal meetings, social gatherings, clubs, the Houses of Parliament, learned societies and country mansions (inside and out). The decision emerges from a web of interactions.



16b. The Admiralty Boardroom, 1807, by Augustus Pugin, with the figures added by Thomas Rowlandson. The First Lord sits at the near end of the table, the Secretary at the other end with the Reader standing beside him. Note the rolled charts, and the tell-tale from the wind-vane on the roof.

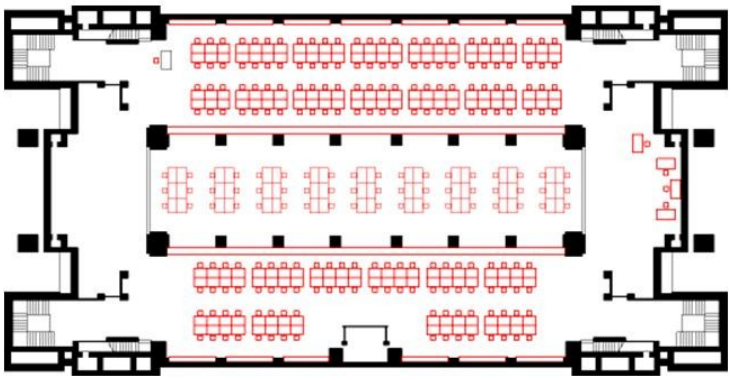


Figure 3. Contrast the admiralty boardroom of 1807 and the Larkin Building 100 years later

London's Shell Centre serves as an early example. In such locations the desk was still the managerial or professional workstation across which paper flowed from in tray to out and on which sat the telephone. Room size, and fittings were strictly controlled (Propst, 1968). Those of sufficient status or power had chairs or separate tables for visitors. For the real upper echelons the office frequently included a more informal meeting area, usually modelled on a coffee table and easy chairs. Such spaces are interpretable as early examples of the awareness that physical space mediates conversation (c.f. Markus and Cameron, 2002; Baker, Jensen and Kolb, 2005)

Surviving examples of the corridors of power spaces can still be found today not least in

academia as Chism (op cit) remarked. Figure 4 was the result of a Google search[6] for academic offices and was the first image to appear as a plan rather than a picture. The nuancing of office size and location is obvious. Indeed the layout has a passing resemblance to a plan of a camp for Roman Legions (Figure 5).Alternatives to such arrangements are strongly resisted (Price and Fortune, 2008; Price, 2009). Critical academic scholars who interpret other spaces in terms of power (e.g. Hancock and Spicer, 2011; Baldry and Barnes, 2012) continue to work on corridors which embody it.

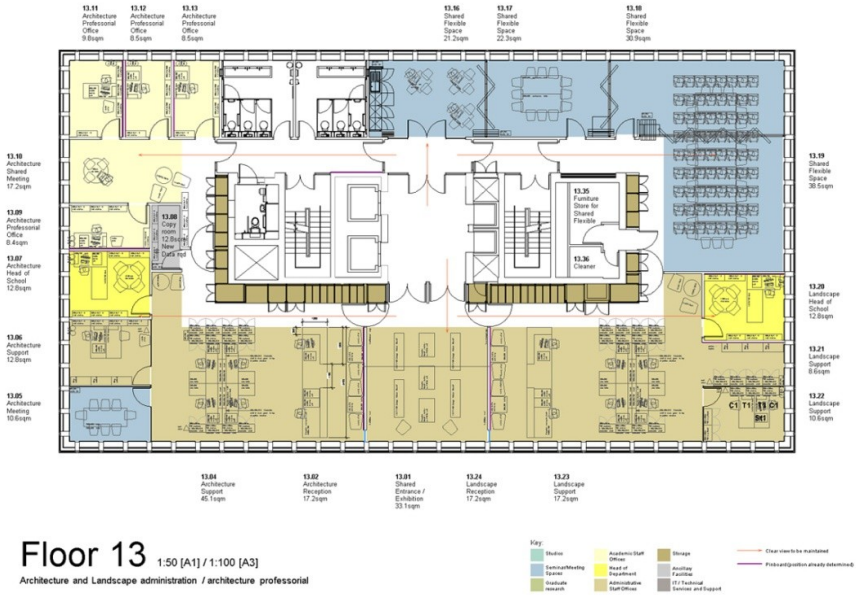


Figure 4 A 'Corridors of Power' workspace in current academia.

[6] 3rd January 2013

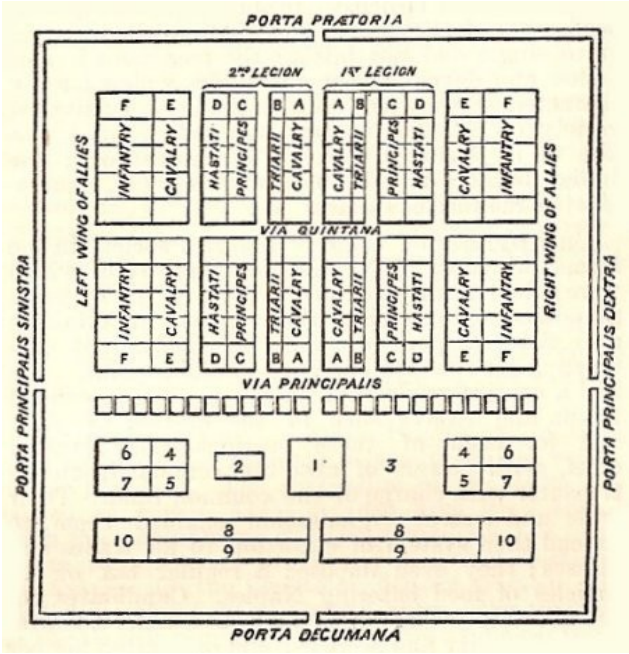


Figure 5 The layout of a Roman Legionary camp (derived from a google images search)

Elsewhere there were other developments. In the same decade that Rodgers was writing *Freedom to Learn* the corridor and cellular office combination was also first seriously challenged. In 1960s Germany the pioneering consultants Wolfgang and Eberhard Schelle promoted the *Burolandschaft,* or landscaped office, arguing, even then, for freer information flow, increased openness and equality and what might now be seen as faster organisational learning. Irregular arrangements of desks displaced straight lines although the rectangular desk remained the basic work unit (Figure 6). Their concept became fashionable and reached the USA by 1967 (Sundstrom, 1986) but, in its North American manifestations at least, landscaped offices retained the nuancing of status by desk size and furniture (Figure 7). The concept had arguably mutated to meet the dominant wisdom.

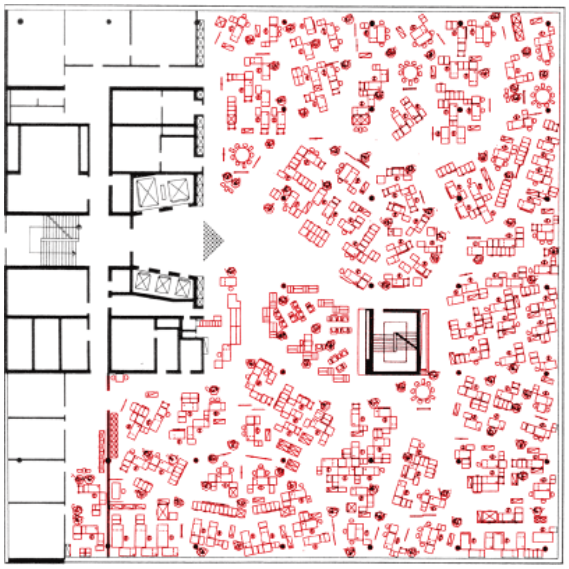


Figure 6 An early 1960s burolandschaft design combining straight desks with random positioning

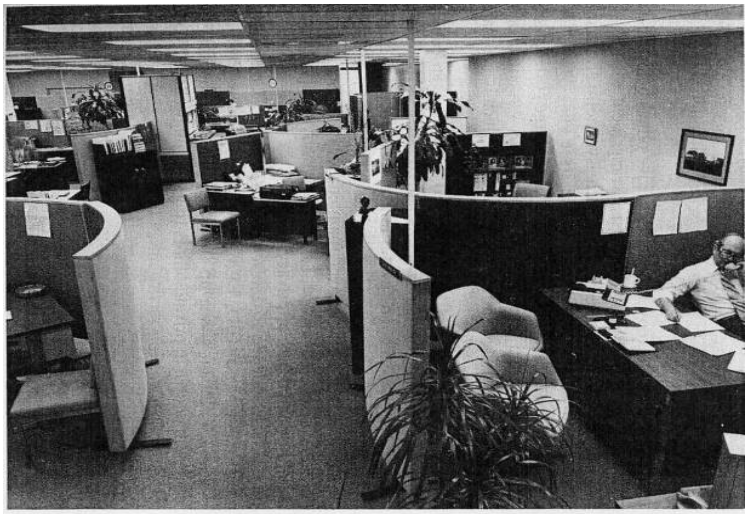


Figure 2.6. A typical *Burolandschaft. Source*: Photograph courtesy of Frank J. Carberry, managing director, Office Landscape Users Group, Philadelphia.

Figure 7 Burolandschaft interpreted for the USA. Note the chairs as indicators of hierarchy and activity at the desk. Reproduced with permission from Sundstrom (1986)

The desk remained necessary as a paper processing surface and stand for a cabled phone. It continued to be used as a meeting table arranged to protect and place the occupant in a dominant position vis a vis subordinates. A traditional, managerialist and hierarchical culture did not fit easily in a freer work place. Furthermore in Europe at least employees saw themselves as, again, watched over by directly visible superiors. Whether the sudden hike in

energy costs from 1973 was a cause or an excuse, the fashion rapidly failed and there was a marked return to cellular offices. Some architects sought to resist the trend and Scandinavia, where the sense of democracy and fairness in the work space was strong, saw the development of the combi office (Van der Voort, 2003) in which, theoretically, every employee had their glazed shell looking on to a common core. In practice more junior staff were soon relegated to that core. In general however there is less recognition of the social in office design from the period.

Perhaps in the same 1960s spirit US furniture group Herman Miller launched their action office concept in 1968; a concept credited to their then head of design Robert Propst who lived to see himself hailed as the father of the cubicle. An interview reported two years before his death survives online (Propst, 1998)

> "I don't even feel faintly guilty about Dilbert," Propst says from his suburban home near Redmond, Washington. "The things expressed in that comic are the very things we were trying to relieve and move beyond. It was a Dilbert world even back then. Everything we worked toward tries to express something more interesting."
>
> "Back then" was the early Sixties, an era when offices were huge, open spaces filled with orderly rows of desks and chairs, surrounded by neat, closed-in rooms. "Those offices were devoid of the imprint of work or process," says Propst. "I call it the clean-desk syndrome. At the end of the day, ideally, you had no bodies or paper showing. It was so sterile. The CBS Building in New York was an interesting example. In there, you could not choose anything yourself, except maybe a picture of your wife or your dog."

He goes on to criticise those who picked up the concept and converted it into what it became:

> The austere quality for which cubicle-filled offices are now criticized was entirely intentional. "We tried to create a low-key, unself-conscious product that was not at all fashionable," says Propst. "The Action Office was supposed to be invisible and embellished with identity and communication artefacts and whatever you needed to create individuation. We tried to escape the idea of being stylish, which is gone in five years. We wanted this to be the vehicle to carry other expressions of identity. That's why we provided tackboards and all kinds of display surfaces [....]
>
> There were early signs that not everybody understood. "A lot of people in the industry said, 'Where the devil is the design?' " Propst chuckles. Still, the Action Office caught on almost immediately, spreading throughout the American workplace, and spawning imitators (Propst's last count puts them at 42). But Propst's forward-thinking motives were misinterpreted by some companies, which simply crammed more workers into smaller spaces and took advantage of the system's huge potential for savings and tax breaks (laws permit businesses

> to write off the depreciation of cubicles much more quickly than that of traditional offices). "The dark side of this is that not all organizations are intelligent and progressive," Propst says. "Lots are run by crass people who can take the same kind of equipment and create hellholes. They make little bitty cubicles and stuff people in them. Barren, rat-hole places."

In terms of our B.C.H.S.E. model (Figure 1) Propst might be seen as having tried to move toward at least the humanist if not the transactional, social constructivist dimension. The norms of office planning and organisational culture would seem to have frustrated him. Other attempts at more social workspaces also appeared in the 1980s. The 1985 Scandinavian Airlines [SAS] HQ building became famous as one of the first to incorporate a 'street' design widely imitated but frustrated in practice when use of the street was often perceived by staff and managers alike as idling, as not 'work' (Donald 1994).

Comparisons

When we contrasted theories about workspace and theories of cognition we discovered the comparison was more synchronous than we expected (Figure 8). Early twentieth century offices were firmly behaviourist: and their design carries over in modern educational spaces, whether lecture theatres or staff offices. Corridors of power nuanced for professional 'knowledge workers' appeared in the same decade as did cognitive theories of learning while the burolandschaft movement is human centred and synchronous with Freedom to Learn.

Social learning spaces appeared in corporate offices in the 1980s and ecological metaphors entered both literatures in the 1990s. Becker's Organizational Ecology metaphor conceptualized the workplace as a system in which physical design factors both shape and are shaped by work processes, the organization's culture, workforce demographics, and information technologies (Becker, 2007). In practice however behaviouralist, rectinlinear designs persist as, in some sectors, do the more literal corridors of power. Why might this be?

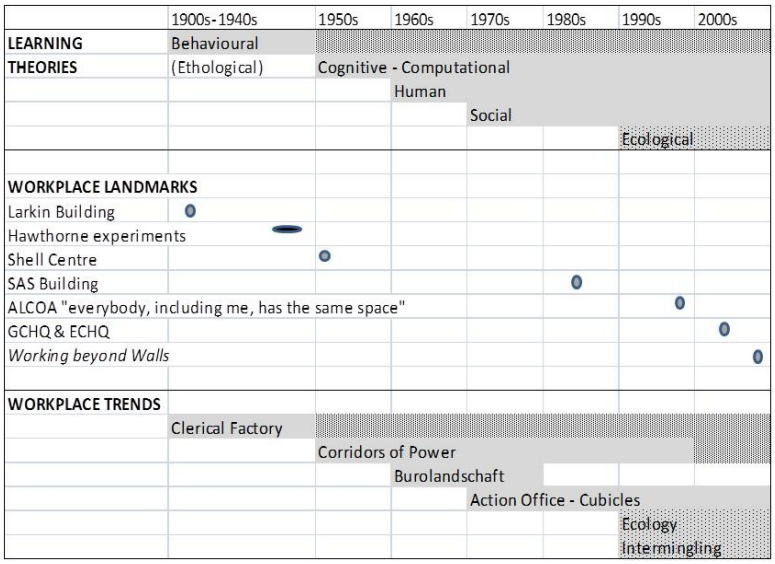


Figure 8 Parallel developments in theories of cognition and work space, with some 'landmark' buildings representing different phases.

Disussion: Extended Narrotypes?

Theory and practice

We observe in both the histories sketched above a theoretical development of ideas concerning learning and 'knowledge work' from the hierarchical, and behavioural, towards the inter-connected or ecological. Although we are unaware of literature that has made this comparison it is perhaps not surprising. Both developments may reflect a wider zeitgeist and or a response to overall cultural evolution. Hence, for example, the 1960s – a decade that saw both freedom to learn and *burolandschaft* – were famously[7] emancipatory in other walks of life. That emancipation extended to a wave of building in universities and the foundation of many new ones. The buildings reflected the technology and mores of the time, the era of post war 'corridors of power' construction that Sundstrom (1986) has highlighted as enabled by technological developments. In terms of the debate between Dawkins and the niche constructionists, alluded to earlier, one might say construction technology opened a new

[7] Or notoriously depending on one's narrative stance

macro scale niche but that it was niche changing rather than niche construction

Yet despite such larger scale environmental changes actual spatial practice shows a degree of persistence. Practice lags theory. Older spatial forms – whose earlier manifestations can be found in at least Roman times – persist, even as the wider environment changes dramatically. It seems that in spatial evolution, if that is what it is, there is a rendency to stasis just as there is an the evolution of concepts.

As even Dawkins (1986: 125) has observed most of natural selection is concerned with preventing evolutionary change rather than with driving it. Persistence in the face of changing environments has even been argued as meaningful adaptation (Wake, Roth and Wake, 1983). The source of such stability in organismic evolution is not hard to find. It is a logical end point of Evolutionary Stable Strategies that systems of co-evolved entities[8] act to suppress competitors entering their niche. The spatial persistence we have observed has the hallmarks one might expect of an evolving system.

Status and dominant narratives

Visually the professorial offices in Figure 4 or the large desks in the foreground in Figure 7 have something in common with beavers' dams, termites' mounds or Weaver Birds' nests. They are physical structures that enhance the well being and power of certain occupants. The instructor's lectern in Figure 2 or the supervisors' stations in Figure 3 (far right of the floor plan) fulfil the same purpose. If what is replicating in organisations is Waddington's (1976) conventional wisdom of the dominant group or Csikszentmihalyi's (1988) similar proposition field, the prevailing mental models of the influential individuals then the spatial arrangements could be seen as serving, and indeed replicating, those interests. Indeed in Csikszentmihalyi's

[8] We are avoiding discusssions of the level of selection.

language they are a specific part of the domain (the symbol system of the influential individuals). Physical space reflects, and replicates, a particular part of a dominant memeplex. If, as outlined above, and argued by evolutionary accounts of social constructs, we consider mental models as constructed via ‘narrative’, we arrive at spatial arrangements as benefitting a particular narrative hence the title of this paper

As Toulmin (1972) seems to have been the first to explain in strictly evolutionary terms, concepts face a competition to be accepted by influential individuals. Nowhere is this more true than in the sphere of academia. The individual office allocated to the tenured individual, or the privileged lectern in front of the lecture theatre, reflect and re-enforce the influence of those who use them. The spatial arrangements play a part in conceptual selection. This may not however be the only construct or narrative thus replicated. What of those who design and provide the spaces concerned?.

Efficiency

We see, in the extended quotation from Propst above, how a narrative of efficiency and cost minimization led to work space designs mutating back towards rectilinear cubicles, or open grids. In one of the first comprehensive studies of new 'open', ecological, workplaces Becker et al. (1994) distinguished cases that were primarily business driven (i.e. they were designed to achieve a result narrated in terms of organizational goals) from those that were primarily cost driven (i.e. they were unlikely to have happened without a narrative of reducing costs by increasing occupation density). Becker et al. found a very significant and large, positive difference in the average satisfaction with the result in the former as opposed to the latter and a greater commitment to involving users in the process of workplace development versus recquiring them to accept a template solution. They also speculated that the cost driven solutions would prove to be less self sustaining because of a need to either correct mistakes in the implementation or because of user reactions (such as colonising space for new cellular

offices) once the change was over and the cost pressure was reduced.

Efficiency and control over space remains to this day part of the dominant narrative of Facilities Managers, as those who provide workspace have come to be known. The design language becomes a matter of space standards and the number of workstations that can be accommodated on a given floor plate. The result is often a 'roman legion' design, elements of which are clearly present in the 'other ranks' space illustrated above (Figure 4)[9]. The 'generals' might have a degree of freedom. The rest are expected to be at their 'station'. It is hardly surprising that in spaces laid out like lines of battle territorial divisions between departments are re-enforced and strengthened, even if the resulting failures of communication drive a firm to terminal decline (Breslin, 2012).

Alternative narratives.

We thus interpret many modern office and teaching spaces as helping replicate two narratives, that of influential individuals (sensu Toulmin) and that of space providers. Lest this picture seems unduly pessimistic let us look at an alternative. Spaces where the design does manifest modern ideas of learning can be found in many learning centres as former libraries have come to be known. A typical modern learning centre provides its users with a variety of spatial milieus for different forms of individual and group based study. Importantly the choice of space is left to the same users who enjoy a spatial autonomy denied them in class rooms, or indeed denied the occupants of cube farms and their ilk. The narrative label 'learning centre' is instructive. Like the libraries that they evolved from these are spaces designed from a tradition of supporting autonomous – democratic in the terms of this conference – learning..

[9] It is too complex a diversion for the current paper but computer aided design programmes make the laying out of such standardised spaces easier.

There may be a similar counter narrative in successful modern open-plan workspaces driven by the need to accelerate organizational learning. The UK's Civil Service has largely abandoned its corridors of power and the service's then head, introducing a report on *Working without Walls* (Allen et al., 2004), wrote:

> My own experience, as the champion of the Treasury redevelopment project, confirms there are tangible benefits to be gained from work place and organizational change. The Treasury project illustrates vividly the way the **geography of an organisation** (emphasis added) can reinforce its culture and its management aims. (The Building) has promoted communication, both formal and informal and has encouraged flexible ways of working. Above all it has fostered a feeling of self confidence and presented an attractive image to the talent we need to recruit.

In an earlier, *Harvard Business Review,* debate on whether open space can work Vischer (1999) cited former U.S. Treasury Secretary Paul O'Neill, stating of his time as CEO of Alcoa: (p. 36 emphasis added)

> Having successfully implemented a move to an open-design concept **where everyone including me has the same work space** we have seen wonderful changes in terms of culture and quality of work. **The entire building is our office.**

We add the emphasis because the quote illustrates two points that we believe are of great significance to the future of learning space. Firstly there is the removal of overt physical symbolism of power and status. Secondly there is the move away from the emphasis on individual space and the explicit recognition that the totality of the building is there for all. The office functions as a Library or Learning Centre rather than a series of stations for the occupants. This second point opens up new possibilities for space trading within the existing footprints of higher education buildings, to include greater recognition of the role of the spatial ecology beyond the walls of the institution. It brings to the organisational workspace the freedom of the learning centre. It does though challenge traditional narratives of 'my space', efficiency and individuality.

Acknowledgements

Price is particularly grateful to Professors Keith Alexander and John Worthington for discussions on the history of the office and to Craig Murray of the TSK Group who alerted him to the statement that everyone in our office has all the space. Beard would like to acknowledge the contribution made to his thinking by many corproate sector staff who have taken part in his experiential and experimental designs on matters of the role of the body in learning. The subsequent discussions, set within many international contexts, have been invaluable. We both appreciate the comments of three anonymous reviewers.

References

Abram D (1997) *The Spell of the Sensuous.* New York: Vintage Books.

Ager, D. (1972) *The Nature of the Stratigraphical* Record. London, Macmillan.

Allen T., Bell A. Graham R. Hardy B., and Swaffer F., (2004), *Working without walls -An insight into the transforming government workplace.* London, HMSO.

Abatecola, G. Breslin, D, Lord, A.S. and Price I. (2013) Issues in Organizational Darwinism. Discussion paper for EURAM 2013

Baker AC, Jensen PJ, and Kolb DA (2005) Conversation as Experiential Learning, *Management Learning* 6(4): 411–427.

Baldry C and Barnes A. (2012) The open-plan academy: space, control and the undermining of professional identity, *Work Employment Society*26(228-245)

Beard, C. M. (2009) Space to Learn? Learning environments in higher education, , in BUSWELL, J. and BECKET, N (eds) *Enhancing Student Centred Learning in Business and Management, Hospitality, Leisure, Sport and Tourism*, Newbury, Threshold Books. 179-188

Beard C.M. (2010) *The Experiential Learning Toolkit: Blending Practice with Concepts,* London, Kogan Page.

Beard C.M. and Price, I. (2010) Space, conversations and place: lessons and questions from organisational development *International journal of facility management*, **1** (2) unpaginated.

Beard C.M. and Price, I. (2012) Learning spaces that change people and organizations, In WILSON J.P., ed. *International human resource development: learning, education and training for individuals – 3rd edition*, London, Kogan Page. 465-480.

Beard C.M. and Price, I. (2013) Room for Improvement, Royal Society of Arts Journal, Spring, 38-41

Becker F.D. (1990) The total workplace: facilities management and the elastic organization. New York: Van Nostrand Reinhold.

Becker F.D., Quinn K. L., Rappaport A. J. and. Sims W. R.,. (1994) Implementing innovative workplaces - organizational implications of different strategies Ithaca NY: Cornell International Workplace Studies Program

Becker, F.D. (2007) Organizational Ecology and Knowledge Networks. *California Management Review* 49(2 Winter): 42-61.

Bloom BS (1956) Taxonomy of Educational Objectives, Handbook 1: The Cognitive Domain. New York: David McKay.

Breslin. D. (2011) Reviewing a Generalized Darwinist Approach to Studying Socio-Economic Change. *International Journal of Management Reviews,* 13(2) 218-235.

Breslin D. (2012) Spaces and the Coevolution of Practices within a UKMetallurgical Equipment Supplier, in In ALEXANDER, K. and PRICE, I., eds.. *Managing organizational ecologies: space, management and organizations.* New York, Routledge, 234-246

Britzman DP (1998). Lost Subjects, Contested Objects: Towards a Psychoanalytic Inquiry of Learning. New York: State University of New York Press.

Chism, NVN. (2006) Challenging Traditional Assumptions and Rethinking Learning Spaces, in Oblinger D (ed.) *Learning Spaces,* EDUCASE *pp. 2.1 – 2.12* http://www.educause.edu/learningspacesch2 (accessed 13 April 2012)

Csikszentmihalyi, M., (1988). Society, culture, and person: a systems view of creativity, in. Sternberg, R. J. (Ed.) *The Nature of Creativity: Contemporary Psychological Perspectives*, New York: Cambridge University Press, 325–339.

Darwin, C. R. (1871). *The Descent of Man, and Selection in Relation to Sex*, London: John Murray.

Dawkins, R. (1983) *The Extended Phenotype: The Long Reach of the gene*, Oxford UK, Oxford University Press.

Dawkins, R. (1986). *The Blind Watchmaker*, London: Longman

Dawkins R. (2004) Extended Phenotype – But Not *Too* Extended. A Reply to Laland, Turner and Jablonka *Biology and Philosophy* 19(3) 377–396, 2004.

Dillon, P. (2007) A Pedagogy of Connection and Boundary Crossings: Methodological and epistemological transactions in working across and between disciplines, a paper presented at *'Creativity or conformity? Building Cultures of Creativity in Higher Education'*, University of Wales and the Higher Education Academy, Cardiff, January 8-10.

Distin K (2010) *Cultural Evolution*. Cambridge UK: Cambridge University Press.

Donald I (1994) Management and change in office environments. *Journal of environmental psychology* 14(1); 21-30.

Eldredge, N. and Gould, S.J. (1972) Punctuated Equilibrium: An Alternative to Phyletic Gradualism, in SCHOPF, T.J.M, ed. *Models in Palaebiology* San Francisco, Freeman Cooper 82-115.

Ferguson N (2008) *The Ascent of Money: A Financial History of the World*, London: Penguin.

Gagne RM (1974) *Essentials of learning instruction*, Hinsdale, IL: Dryden Press.

Gallagher S (2005) *How the body shapes the mind*, Oxford: Oxford University Press.

Gardner H (1983) Frames of Mind. The theory of multiple intelligences, New York: Basic Books.

Hancock P and Spicer A (2011) Academic architecture and the constitution of the new model worker, *Culture and Organization* 17(2): 91-105

Hull D. L. (1988) *Science as a process: an evolutionary account of the social and conceptual development of science*, Chicago, University of Chicago Press.

Illeris K. (2002) *The Three Dimensions of Learning.* Malabar Fl.: Krieger Publishing.

Lakoff G. and Johnson M (1999). *Philosophy in the flesh*. New York: Basic books.

Laland K.N. (2004) Extending the Extended Phenotype, *Biology and Philosophy* **19:** 313–325,

Langrish, J. Z. (2004). Darwinian Design: The Memetic Evolution of Design Ideas, *Design Issues*, 20(4), 4-19

Lewin K (1951) *Field theory in social science*. New York: Harper & Row.

Markus TA and Cameron D (2001) The Words between the Spaces: Buildings and Language. London: Routledge.

Mayr E. (1991) *One Long Argument- Charles Darwin & the Genesis of Modern Evolutionary Thought,* Cambridge MA Harvard University Press.

Myerson J (2012) Workspace redesign to support the 'front end' of innovation. In ALEXANDER, K. and PRICE, I., eds.. *Managing organizational ecologies: space, management and organizations.* New York, Routledge, 22-33.

Myerson J and Ross P (2006) *Space to Work; New Office Design*, London: Laurence King Publishing.

Pavlov I (1927) Conditioned reflexes: an investigation of the physiological activity of the cerebral cortex (translated by G.V.Anrep), London: Oxford University Press.

Peters T (1992), Liberation management: Necessary disorganization for the nanosecond nineties, London: Macmillan.

Price, I. (2012a) Organizational ecologies and declared realities In ALEXANDER, K. and PRICE, I., eds.. *Managing organizational ecologies: space, management and organizations.* New York, Routledge, 11-21.

Price, I. (2012b) The selfish signifier: meaning, virulence and transmissibility in a management fashion. *International Journal of Organizational Analysis*, **20** (3), 337-348

Price, I. and Fortune, J. (2008). Open plan and academe: pre- and post-hoc conversations. In: THEN, D. S.-S. and FINCH, E., (eds.) *Proceedings of the W070 conference: healthy and creative facilities.* CIB publication (315). CIB, 613-620.

Price. I. (1995) Organisational Memetics?: Organisational Learning as a Selection Process. *Management Learning*, 26 (3), 299-318.

Price. I., (2007) Lean assets: new language for new workplaces. *California management review*, 49 (2), 102-118

Price. I., (2009), Space to adapt: workplaces, creative behaviour and organizational memetics. In: RICKARDS, T., RUNCO, M.A. and MOGER, S., (eds.) *The Routledge companion to creativity.* London, Routledge, 46-57

Propst R (1968) *The Office, a Facility Based on Change.* Ann Arbor MI: Business Press

Propst R (1998) http://www.metropolismag.com/html/content_1198/no98man.htm (accessed 20 September 2011).

Rodger NAM (2004) The Command of the Ocean: A Naval History of Britain 1649-1815, London: Allen Lane.

Rogers C.R., (1969) Freedom to learn: a view of what education might become**.** Columbus OH: Charles E. Merrill

Ruse M. (1986) Taking Darwin Seriously:A Naturalistic Approach to Philosophy. Oxford UK, Basil Blackwell

Shapiro L (2011) *Embodied Cognition*. Abingdon UK: Routledge

Sheets-Johnstone M (2009) *The Corporeal Turn, an interdisciplinary reader***.** Exeter: Imprint Academic.

Skinner B (1974) *Adult behaviourism,* London: Jonathan Cape.

Snow C.P' (1964) *Corridors of power*, London: Macmillan.

Sterling S (2001) Sustainable Education: Re-visioning Learning and Change. Totnes: Green Books.

Sterling S. (2003) Whole systems thinking as a basis for paradigm change in education: explorations in the context of sustainability, PhD Thesis.University of Bath, UK.

Sundstrom E (1986) Work places: The psychology of the physical environment in offices and factories, New York: Cambridge University Press.

Toulmin, S. (1972) Human understanding: The collective use and evolution of concepts. Oxford, UK: Clarendon Press.

Van der Voordt D.J.M., (2003), *Costs and benefits of innovative workplace design TUDelft Centre for People and Buildings*

Vischer, J.C. (1999) Case study: Can this open space work? *Harvard Business Review* 77(May-June), 28-36.

Vischer, J.C. (2012) Managing facilities for human capital value, In ALEXANDER, K. and PRICE, I., eds.. *Managing organizational ecologies: space, management and organizations.* New York, Routledge, 34-47.

Waddington, C.H. (1976) *Tools for thought: how to understand and apply the latest scientific techniques of problem solving,* New York: Basic Books,

Wake, D.B., Roth g. and Wake, M.H. (1983) On the Problem of Stasis in Organismal Evolution, *Journal of Theoretical Biology,* 101 211-224

Weeks J. and Galunic C. (2003) A theory of the cultural evolution of the firm: the intra-organisational ecology of memes, *Organization Studies,* 24, 1309-1352