

Work(er) driven innovation

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Abstract

A question that emerges from within the increasing emphasis on work-based learning as a foundation of innovation is: what is the difference between improvisation and innovation. How and when does a work-developed improvised solution to a work related problem become innovation? The literature suggests time, scope and impact are key features of organisational practice that offer ways of explaining the difference. That is, innovations are developed through reflective experience (not spontaneously emergent), engage a range of participants (not single users) and represent substantial change that is recognisably new and lasting (not minor variation that is superseded or forgotten).

This paper argues that such distinctions are unnecessary and hinder understandings of the creative nature of work. It proposes that a stronger focus on work-learning as workers' personal enactment of the collective activities that comprise their occupational practice and its circumstances can clarify the nature of innovation. The argument is advanced through discussion of four kinds of innovation that were identified through examining the work-learning practices of restaurant, health club, computing and fire service workers. They are i) personal heuristics, ii) test benching, iii) efficiencies and iv) shared needs. These innovation forms illuminate the work-based processes of personal learning practices and offer means of explaining innovation and improvisation as foundational factors of work not as categories of the consequences of altered practices.

Innovation and work

There are many conceptions of and perspectives on innovation. Among them are those that focus on enhanced organisational performance through new and better products and production processes. Within such understandings, innovation comes to be seen as a success imperative. Organisations that are innovative are more likely to succeed in the increasingly competitive economy (Sawyer & Bunderson 2013). Being innovative is about securing commercial advantage in the market place. Such advantage underpins organisations' continuing viability and is most often marked by investment in systems and resources, for example, in research and development, marketing and distribution, skills and workforce capacity development, information and technology infrastructure, financing and accumulation and partnerships and affiliations (e.g., materials supply, political connections, etc.). Such investment for enhanced performance and related organisational practices are elements of what Lazonick (2005) describes as the 'innovative firm'. These organisations are those that successfully initiate and respond to social change.

This paper retains an organisational focus. It views innovation as a bound up in the work and associated learning practices that characterise organisations' operational and developmental processes. More specifically, it examines and discusses workers' contributions to these processes, acknowledging that they and the very personal ways by which they enact the collective practices that comprise their work are generative of a range of innovations, not because they are charged with being specifically innovative but because engagement in the seemingly routine practices of work is very often generative of the new and different - the inventions, solutions, improvisations, alternative perspectives, adaptations and contrivances that constitute innovation. Put simply, work is an

innovation practice. Workers' personal engagement in and substantial contribution to that practice can be understood as the changes enacted as learning and work transformation (Billett 2012).

The term work(er) driven innovation is used here in place of the term employee-driven innovation in recognition of the relational and interdependent nature of employees and their organisations. Workers' capacities to develop and enact new practices are bounded by the organisational constraints and affordances in which their work is situated. Equally, organisational goals are subject to the degrees by which workers invest themselves in the purposes and processes that generate and support these goals (Billett 2012). Therefore, employees cannot act (i.e., innovate) alone. However, as workers engaged in collective practice, employees co-contribute to the new and different practices (i.e., innovations) by which their work and organisational practices progress.

To illustrate and support its case, the paper draws on longitudinal ethnographic research that explored the very personal ways in which restaurant, health club, computing and fire service workers enacted their work. Four examples of work(er) driven innovation are illustrated. They are: i) personal heuristics, ii) test benching, iii) efficiencies and iv) shared needs. These innovation forms illuminate work-based processes of personal learning practices and offer a means of explaining innovation across differing levels of scope and impact as foundational factors of work rather than as categories of the consequences of altered practices. A conclusion that may be suggested from these findings is that work that can more fully enable and support workers' enactment of personal heuristics, test benching, efficiencies and shared needs practices may secure the innovations that accrue from workers' engagement in work.

Defining innovation

Innovation may be broadly defined as "the tendency to think about new and better ways of doing things and to try them out in practice" (Fagerberg 2005: 1). Although not specifically seeking to define innovation in these exact words, in using them, Fagerberg captures much that applies to the nature of work and workers personal enactment of it. Work is transformative. Through time and activity, it may be seen as transforming, for example, resources into goods and services, novices into experts, skill sets into occupations and livelihoods and markets into economies. Notions of work as both social institution and personal endeavour may suggest amending Fagerberg's phrase to read – 'innovation is the practice of doing things differently'. The success or otherwise of particular innovations may perhaps be found in the degree to which they enable further and more useful transformation.

From such a perspective all innovations are incremental, that is, innovations are constructed through time and practice and thereby visible only in hindsight as snapshots or static conceptions of transformations in action. So, for example, contemporary innovations in mobile telecommunications technologies such as 'smartphones' are built on the advances in batteries, circuitry and wave band differentiation that preceded them. And these, in turn, were dependent on the magnets, metals and electricity conduction technologies that were the foundations of early telephony. The new and different is emergent from the old and familiar through the energy and effort of those who work and generate change. Such realities render differentiations of incremental and radical innovations limited in their capacity to do more than categorise innovations on the basis of time lags to commercialisation and market acceptance (Verspagen 2005) or the numbers and kinds of knowledge and skill sets that were integrated in the conceptualisation and production of an innovation. Radical innovations are those that changed the world, for example, agriculture, representative democracy and electricity generation. They cannot be understood in terms of a singular source or origin. Similarly, the great

inventions that have transformed contemporary living are better understood in terms of incremental breakthroughs in science and technology that build on each other through the enterprise of workers and their organisations.

As incremental, innovation is a social process. In any work or workplace it brings together a broad range of resources that include the histories of participants and their contexts, their proclivities and mediating circumstances, the nature of the relationships participants share as colleagues, supervisors, friends, mentors, etc., and the kinds of interactions their work and relationships enable. Just who and what among these integrated resources can be considered primary or initiating of innovation can be unclear when seeking to distinguish what and how workers (collectively and individually) contribute. Hoyrup (2012) identifies three orders of employee-driven innovation (EDI) in efforts to clarify the scope, source and directionality of innovations that arise from the energy and efforts of workers. First order EDI are 'bottom-up processes' where innovation arises from workers simply doing their work through their "reconstruction of work practices that is not initiated with a goal of innovation in mind" (Hoyrup 2012: 10). Second order EDI are combinations of bottom-up and top down processes where management supports innovation initiated by employees and third order EDI are top-down processes that initiate innovation through managers purposefully involving employees in projects and development opportunities (Hoyrup 2012). As useful as these orders are in identifying how innovation might be understood as beginning in and with certain individuals and practices, the differentiation of employees and managers through top-down and bottom-up understandings may be seen as unnecessarily separating worker roles. Managers are employees of the organisations they work within and their capacities to direct or monitor the work of others may have little (or much) influence over the creative, agentic and often accidentally fortuitous actions that can be the catalyst of innovation. In some instances (and of course dependent on what constitutes routine practice in any particular organisation) managers bringing staff together to address a specific issue or task may itself be highly innovative and thereby be an example of EDI or, more specifically here, work(er) driven innovation.

Such innovation perspectives on workers, work and workplaces align with what Tzeng (2009) outlines as the corporate entrepreneurial school of thought that arises from Schumpeter's economic and innovation theories (1934). This school of thought conceptualises innovation as a grassroots impetus, a social phenomenon that is grounded in and emergent from the interdependent engagement of multiple actors. These actors are the stakeholders, the vested interests in the work at hand, that come together around new ideas and understandings in their efforts as co-producers of better ways of doing things. Tzeng (2009) notes this coming together is indicative of strong identity-based relationships likened to belonging to a community and generative of loyalty that enables creativity. In illustrating the entrepreneurial school, Tzeng (2009: 380) states, "innovation is not an economic thing and is not calculable ... Rather, innovation is something that happens in human relationships". A primary quality of these relationships and the belonging and identity on which they are based is their authenticity – the voices of those so engaged are relevant, they come from within the processes of their creation and are thereby able to identify and articulate genuine need and opportunity. The shop floor, the coal face, the front line, the end user, are the kinds of descriptive phrases that identify who and where these identity invested voices and the relationships they enact are and can be found. A final quality or characteristic Tzeng (2009) outlines is that grassroots innovation emphasises improvisation in action. Drawing on Brown and Duguid's (1991) research into Xerox technician's work, Tzeng (2009: 381) notes these workers "worked, learned and innovated in real time. They responded to problems and developed actual work practices in situ. They had the tendency to make do with whatever they had at hand". Through these defining characteristics, that is, interdependent co-production based on a relational and situated authenticity that improvises through learning in practice

that is both responsive and creative, Tzeng (2009) captures much of the nature of work(er) driven innovation and its immediate entrepreneurial qualities.

Fundamental to these grass roots innovation qualities and the work from which they emerge, is the practice of learning in and through work. Work is a learning practice that is enacted through workers' personal engagement and investment in the tasks and activities that constitute the social practice that is their work. This engagement is negotiated in the transactions of person, place and practice that identify all the resources of work as having some level of influence in shaping what occurs (Smith 2012). That is, work is a set of multiple on-going interactions or negotiations among; workers (in and with their personal histories, the values, priorities, habits, skills and dispositions this history has generated, etc.); workplaces (in and with the organisation systems, collegial relationships, etc.); and work (in and with the cultural, economic, material, etc. aspects and features of a particular set of work activities). This learning evidences and gives rise to emergent transformations of person, place and practice. So, for example, personal skills sets develop, occupational practices alter and organisations' systems, performance and success in the market place waxes and wanes. Innovation may be understood as one of the conceptualisations of the transformations learning in and through work accomplishes.

Ellstrom (2010) explains these transformations through a cyclical process of learning established in the tensions among explicit and implicit work process and the competing logics of production and development. Work is prescribed and organised on known bases of knowledge (i.e., explicit) that enable and support a logic of standardisation and reproduction. Yet this logic of production is subjectively interpreted and performed (i.e., implicit) requiring a logic of variation and improvisation that in turn identifies and generates new and different ways of organising and prescribing work. The learning cycle continues as an integrated whole and conceptualises what Ellstrom (2010) identifies as practice-based or work(er) driven innovation.

In summary, the concept of innovation outlined here as work(er) driven innovation brings together a range of interrelated understandings about organisations as social, commercial and employment contexts that varyingly enable and support the workers who participate within them to engage in the transformative learning practices that are and underpin the incrementally developing new and better ways of doing things referred to as innovation. Exploring these understandings requires examining workers in action.

Examining workers in action

The nature of work(er) driven innovation is elaborated here through drawing on research that examined workers' personal efforts and contributions to the work and learning processes that comprised their everyday work. The ethnographic research was conducted over an 18 month period and with four groups of three workers from four different workplaces (a State government city based fire station, a privately owned restaurant, a chain owned gymnasium or health centre and a university computing support group). Each of the twelve workers was engaged in quite distinct work and so the project enabled twelve very personal sets of work and learning experiences to be identified and considered and yet retained an opportunity to examine how similar organisational practices (as experienced by the three workers from the same workplace) might shape and distinguish individual workers' practices. Over the 18 month period, each of the workers was interviewed five times and observed in their practice on at least three occasions. The focus was on workers accounting for the ways they went about their work, the learning that supported this work, the kinds and array of

influences that shaped these experiences and the kinds of changes that characterised and emerged from their work.

The extensive semi-structured interviews and observation sessions enabled a highly detailed and rich set of data that afforded the twelve workers high levels of personal reflection on their work and their understandings of themselves in shaping and responding to it. Some important considerations in the interviews were related to the subjective bases from which they enacted their work. These included the personal values, priorities, interests and aspirations they held and the degrees to which they could exercise their agency to develop and sustain these personal factors. So levels of discretion, for example, to act alone, to act on behalf of others, to engage and direct others, to initiate work activities and to promote change were discussed and examined as both work constraints and affordances and learning practices.

The following findings illustrate some of ways the workers and the researcher interpreted the work and learning accounts built up through the research. This ‘building up’ of analytic meanings and perspectives was an iterative process with each subsequent interview enabling a verification and further detailed elaboration of understandings established in previous interviews. The analysis was therefore a co-constructive process rather than a solely researcher based response to the emerging data.

Four kinds of work(er) driven innovation are outlined. These do not represent a definitive list of the ways by which the twelve workers initiated and developed new and better ways of enacting their work. Rather, they are four different examples of how workers’ personal work and learning practices contribute to the innovations that emerge through their engagement in the collective practices, negotiations with tools, colleagues, operational systems and opportunities that comprise their work.

1. Personal heuristics

Work is a very personal process, that is, no two workers are identical and therefore the preparations for and performance of work can evidence a range of highly person specific task management and enactment practices. These practices can be the self-developed techniques, job aids and reminders that assist task completion, ensure high levels of productivity and build the self and work satisfaction that sustains engagement. Here, these practices are referred to as ‘personal heuristics’. They are the person dependent ways and means by which individuals enact their work. Often, these personal practices can shape and enhance the work of others who pick up on and adopt similar practices (e.g., through learning from their colleagues) and or benefit from the greater speed and accuracy such practices can generate (e.g., the levels of energy and effort required of the team is reduced through the personal efficiencies of its members). When such transactions occur, that is, when workers’ practices are transformed through the influence of fellow workers’ personal or idiosyncratic ways of doing things, learning and work(er) driven innovation are evident.

To illustrate – in a busy restaurant, when service is in full swing, wait staff are simultaneously engaged in a range of work tasks that are all important. This work is intense and complex, there is much to do and much to understand, and it is highly coordinated and collaboratively enacted. These work qualities demand speed, accuracy and a systematic execution that must be conducted within a strong focus on detail and customer first attentiveness. To support her successful performance of all that this work requires, Rosie has developed a set of task prompts and reminders that enable her to attend to whatever task is judged to be highest priority at the time without neglecting or forgetting other important tasks that can be undertaken when the immediacy of the moment is past. These

prompts and reminders are the visual cues she attaches to the necessary equipment of her work. For example, getting food to the table is more important at the time of its placement on the servery counter with the Chef's call, than entering newly taken orders from other customers. These orders are noted in a pad and then transferred to the kitchen through the computer located at the wait station. Rather than put the pad into her pocket and perhaps forget to enter the new order immediately after attending to the table service, she will leave the pad in a conspicuous place where she knows she will not help but notice and attend to it. Such attention will be 'automatic' because of the significance of the pad to her work and the constant scanning of the room that her work requires. In interview she elaborates,

There are always priorities but if everything seems a priority ... I leave things out [on display]. I have somehow developed that because it works for me. Like, I'll leave a pad out with stuff on it ... so I'll leave the pad out in the middle of the bench so that I know when I come back I'll see it and put it [the new order] straight through ... I see it and I remember. So I must do it, so I remember.

Other tasks are signalled differently. A fork left slightly positioned off the table prompts additional cutlery is required. A crushed napkin signals table clearance and the dessert trolley is required. An upturned glass signals freshly polished glasses are required. In the busyness of service, none of these prompts would seem out of place particularly given the speed with which they are attended to. However, Rosie is aware of them potentially seeming 'messy' to customers and this aspect of her work gives these personal heuristics added significance as she works to ensure high levels of customer service.

Over the 18 months of the research Rosie became the senior wait staff and took on responsibility for training the many part-time and casual on-call wait staff the restaurant relied on. Despite being reluctant in the role (her personal priorities were her university studies and the wait staff job seen only as a source of income during these studies), Rosie was described by her boss, one of the restaurant part owners, as a good trainer who ensured other wait staff were quick to conduct themselves as the restaurant required. In interview discussing her training approaches and responsibilities Rosie mentioned that she advised new staff to find ways of ensuring they remembered what was needed and how to prioritise the range of tasks enacted. When doing so she would often explain her own ways of doing this, particularly citing the order pad heuristic as a very useful way of ensuring orders were not overlooked in the busyness of service.

2. Test benching

Often, the logic of production that prescribes work tasks and resource allocation is strict and exacting, for example, when high levels of safety and precision are required (e.g., when using heavy machinery, toxic chemicals, etc.). Equally often, there are numerous ways to secure a required outcome and workers have discretion to choose from among a range of satisfactory alternatives what they discern to be the most appropriate course and sequence of action for the task at hand (e.g., to use the scissors or the clippers, to prefabricate or construct on site, to consult or mandate, etc.). When the choice from among alternatives can accommodate some form of experimentation or monitored use of several alternatives, workers may be described as 'test benching', that is, using their work tasks to test ideas and alternatives that may or may not lead to better outcomes. Such transactions are evidence of learning and innovation. Both personally and organisationally, test benching may grow to become projects that warrant further investigation with an eye to wider deployment or they may be dismissed when little or no enhanced value is detected or realised.

Bob's work enables a degree of test benching. He is a computing support technician and his work, when responsive to client requests for assistance, enables him to address problems within a range of 'quick fix, get them up and running asap' and 'serious time will need to be devoted' solution finding activities. Often, the solutions enacted to address client needs are known solutions that have worked in the past in similar circumstances. At other times, these solutions are new, first time applications that emerge from Bob's developing expertise and understanding of the technical systems involved and the people and projects he is assisting. Such new solutions are discussed at team meetings and if considered significant can be documented.

Additional to client response activities Bob's test benching includes experimenting or 'playing' with other aspects of the computing systems that he works within. He discussed his development of a new printer access system for university staff that began with his personally questioning why he couldn't be automatically connected to a printer when he logged on at the start of his working day, rather than having to separately connect to a printer at some later stage when printing was required. His experimenting and discussions with the 'back end boys' led to the implementation of his ideas and suggestions across a group of 150 staff members that later became the system wide adoption of a distributed printing system known as the NDPS. Bob recounts in interview;

I had the idea and went to the server group because they had to do most of the implementation, most of it is back end work – but yeah, it was great. That was back in 2000 and NDPS didn't take off until 2003-4 in the other areas because it was ... only 150 people back in those days. To me it was a great little test area.

Bob's NDPS experience illustrates work(er) driven innovation in the sense of shop floor suggestions being organisationally supported for greater and wider adoption. As such this NDPS innovation seems more visible and perhaps more enduring than the client problem based solutions that are the mainstay of his work activities. However, the impact of these routine work practices that keep researchers and laboratories 'up and running' is more difficult to ascertain and may, overall, represent greater value to the organisation. Part of that value may be found in the nature of client response work generating and sustaining the kind of attitudes and expertise that underpin work(er) driven innovation practice.

3. Efficiencies

Saving time, energy and money through, for example, conserving resources, reducing costs, alleviating waste and double handling, seem to always be motivations and foundations for changing practice. At personal and organisational levels of activity, accomplishing such change can improve performance, raise productivity, enhance profits and may generate growth. At personal levels of work engagement, the kinds of practices that secure these benefits can be as simple as foregoing perceived unnecessary stages in familiar processes, using a single tool where usual practice requires two, using greater quantities of cheaper resources in place of fewer more expensive resources and recycling or repairing rather than replacing. Here, these kinds of practices are referred to as 'efficiencies'. They can be minor or major, improvised or planned. The savings they achieve across all the resources engaged in work identify them as innovations.

For example, Bruce is a fire station officer. He manages the fire crews and resources deployed at the city fire station. His many responsibilities include staff training, emergency response management and supervision and station and heavy equipment management. He recounts the earlier experience (at another station) of being the central hub for a group of suburban stations who coordinated their staffing rosters for ease of staff deployment across their area. On a shift by shift basis, each station

would account for its staff and fax a report through to the central hub where Bruce would collate into a single report and fax onto to the rosters section in the city headquarters. Ensuring the complement of necessary staff for all stations is essential and managing roster allocation is a big part of that process but Bruce could not see the reason for outer stations to fax their reports to him when a simple phone call would do.

I said to the area director out there why do they have to fax it through, why don't they just ring us and say, we're all here today, we've got such and such, then I'll print out the one sheet and fax it through to rosters rather than them faxing it through and having to send it all again ... all stations now get people to ring.

These kinds of simple efficiencies were recounted by all the workers who participated in the research. For example, Dick, one of the computing support technicians, described his reconfiguring of wireless microphones and receivers for greater use across the facility when he previously worked in the university's audio studios. Jane, the casual receptionist at the health club recounted the increased sales that were generated by her getting the cold drinks cabinet moved to the other end of the reception counter where it was more easily accessed by clients when leaving the premises. Rosie from the restaurant devised a table waiting process based on only three table visits that each prompted a purchase decision from customers. Such efficiency practices emerge from the efforts of workers seeking to streamline their work, to make it easier to enact and more sensible in terms of their understandings of what is required and in terms of deploying their developing skills sets in those requirements. These are learning practices, applied, monitored and evaluated through the changes, that is, innovations, they initiate and accomplish.

4. Shared needs

The circumstances of work may be described as being in a constant state of flux - everything is always changing. Many of those changes and the influences they generate are less visible than the process and product changes that mark organisational transformation, not because they are slight or incrementally slow, but because they are indirect or peripheral to operational practice. Some of these changes are emergent from the personal life experiences and circumstances of workers. Workers marry, separate, fall ill, have accidents, take up and give up interests and aspirations and respond to all manner of personal circumstances that mediate their engagement in work. When changes in the personal life circumstances of workers generate changes in work practices, innovation has occurred. These kinds of work(er) driven innovations are here referred to as 'shared needs'. They are characterised by the needs of workers becoming the needs of organisations as each seeks to negotiate and realise their interdependence in ways that secure what might be described as mutually beneficial arrangements.

To illustrate - Ian is a senior fire fighter. He is a heights specialist charged with taking responsibility for high ladder deployment and ropes rescue in emergency responses. During the 18 months of the research his wife became very ill and he needed to take long periods of leave to care for her and his two young children. These leave periods were longer than could be effectively accommodated by the human resource management practices of the fire service and so his capacity to secure his employment was threatened. Through the interviews he discussed that he felt he would need to resign. Through doing so he would be able to attend to his wife and family as fully as possible without the burden of needing to be concerned about how and when his leave could be secured within the regulations, how he would meet the requirements of the additional officer training he was undertaking and the disappointments he felt he generated for his crew and colleagues by having to alter rosters and

scheduled events when his wife's circumstances altered unexpectedly (as was becoming increasingly the case).

Discussions with his fire station officers and senior executives lead to mutually favourable arrangements that enabled Ian to complete much of his work from home. He states,

I have had some influence in changes that have taken place. With my situation at home with my wife's illness I was in a position, after getting involved in management meetings, where I could put my point of view across in relation to procedures for working from home due to the precedent set by my particular situation.

This work entailed greater levels of project analysis and evaluation and report writing that supported things such as internal systems and departmental reviews, high rise building construction fire-safety and security audits and government compliance reviews for staffing and training requirements. Ian recognised this work as 'valuable' and himself as 'contributing' in ways that were very different than his usual on-shift duties. These new working from home arrangements that developed from Ian's personal circumstances and the work engagement needs these circumstances generated for him and the fire service have become more widely applicable across the organisation. They have generated greater work flexibilities for the fire service and its staff and represent a form of work(er) driven innovation that emerges from the shared needs that characterised this work.

Work(er) driven innovation

The four forms of work(er) driven innovation briefly outlined above illustrate a range of transformed work practices that derive from the negotiations among workers, their work and their workplaces. In these four examples it is relatively easy to see what might be described as employee sources of initiation, that is, the origins of work practice innovations being found in the initial energies, efforts and circumstances of individual workers as they personally and uniquely engage in their work. Thus, Ian's personal circumstances and needs initiate new working from home arrangements within the fire service, Bob's ideas initiate improved printing access systems at the university, Rosie's reflections initiate more efficient staff training methods at the restaurant, Jane's repositioning of the drinks machine initiates better access and increased sales at the health club, and so on. It is important to identify and acknowledge the individual workers who were the locus of the four forms of innovation elaborated here. Equally, it is important to understand the social character of this locus. It is based in sets of socio-personal relationships including personal work and learning priorities and practices, the nature of work tasks and their attendant necessities and responsibilities, and the broad range of interdependencies among workers and their colleagues, their organisational constraints and opportunities and the broader social and ideological circumstances in which workers and their employers operate. Workers do not work alone – they are part of a situated and socially derived collective practice (here conceptualised as work-worker-workplace). The significance of these relationships requires acknowledging that the innovations that emerge from work practice can be more accurately seen as work(er) driven innovations. Thus, it is work, the job and all it entails, that initiates innovations by establishing and enabling the socio-personal nexus in and by which engaged individuals enact themselves as workers.

From these findings and conclusions a range of tentative suggestions can be made. First, some of the distinctions used to conceptualise work-practice based innovations may be of little use. For example, distinctions between improvisations and other kinds of seemingly lesser innovations may not be useful in accurately characterising the nature of innovations that emerge from workers' personally

enacted work practice. Similarly, distinctions between employees and managers as sources of work(er) driven innovation only serve to confuse understandings of work-practice innovations by narrowly focusing on certain types of roles and responsibilities rather than the socio-personal relationships that constitute all work.

Second, and most importantly, the depth and breadth of those relationships suggests that it is the nature of work rather than the individual characters of workers that create and support the innovations that emerge from work practice. For example, Rosie's work and learning experience suggests that work that encourages and supports workers to engage in and develop their personal heuristics, their personal ways of making sense of their task requirements and how they can be effectively enacted, can be generative of innovation. Equally, Bob's experience suggests that work enables and supports test benching can lead to valuable innovation. And likewise, as Bruce and Ian's experience suggest, work that encourages efficiencies and work that openly champions community and loyalty through accommodating its people and their needs and contributions, can be generative of work(er) driven innovation. Further, a range of implications for trainers, those who design and facilitate work, as well as those who work, arise from such suggestions. In part, work(er) driven innovation can and does emerge from the routine practice of work. Training and designing for the enabling and enactment of personal heuristics, test benching, efficiencies and shared needs can be generative of the kinds of work(er) driven innovation that emerges from the work-learning experience of everyday work practice.

References

- Billett, S. (2012). Explaining innovation at work: A socio-personal account. In S. Hoyrup, M. Bonnafous-Boucher, C. Hasse, M. Lotz & K. Moller (Eds.) *Employee-driven innovation: A new approach*. Basingstoke: Palgrave Macmillan. pp 92-107.
- Brown, J. & Duguid, P. (1991). Organisational learning and communities of practice: toward a unified view of working, learning and innovation. *Organisation Science*. 2(1), 40-57.
- Ellstrom, P. (2010) Practice-based innovation: a learning perspective. *Journal of Workplace Learning*. 22(1/2), 27-40.
- Hoyrup, S. (2012) Employee-driven innovation: A new phenomena, concept and mode of innovation. In S. Hoyrup, M. Bonnafous-Boucher, C. Hasse, M. Lotz & K. Moller (Eds.) *Employee-driven innovation: A new approach*. Basingstoke: Palgrave Macmillan. pp 3-33.
- Lazonick, W. (2013). The innovative firm. In J. Fagerberg, D. Mowery & R. Nelson (Eds.) *The Oxford handbook of Innovation*. Oxford: Oxford University Press. pp 29-55.
- Sawyer, K. & Bunderson, S. (2013). Innovation: A review of research in organisational behaviour. In A. Thakor (Ed.) *Innovation and Growth: What do we know?*. Singapore: World Scientific. pp 13-55.
- Schumpeter, J. (1934). *The theory of economic development: An inquiry into profits, capital, credit, interest and the business cycle*. Cambridge: Harvard university Press.
- Smith, R. (2012) Clarifying the subject centred approach to vocational learning theory: negotiated participation. *Studies in Continuing Education*. 34(2), 159-174.
- Tzeng, C. (2009). A review of contemporary innovation literature: A Schumpeterian perspective. *Innovation: Management, Policy and Practice*. 11(3), 373-394.