Teacher education as academic work: the affordances of a materialist analysis

Teacher education as academic work: The affordances of a materialist analysis

Joce Nuttall and Marie Brennan

To appear as:

Abstract

In this paper we make an argument for paying close attention to the materiality of practice in understanding the work of teacher educators; specifically, the meanings of artefacts used by teacher educators in the course of their daily work. We locate this analysis within a dialectical materialist understanding of the development of human activity, providing examples of artefacts-in-use in initial teacher education and the meanings accorded to these artefacts by the teacher educators we observed and interviewed. Our aim is to make a case for what is afforded epistemologically when researchers pay attention to artefacts from a dialectical materialist viewpoint. In the final part of the paper we argue that paying attention to how teacher educators engage with artefacts can help us understand the unity of psychological and social processes within dominant approaches to teacher education, as well as providing clues about how adaptation of artefacts can drive cultural change.

Introduction: How do we understand teacher education practice as collective academic work?

The work of teacher education has been brought to the fore of politicians' attention in many countries, particularly through the involvement of the OECD in its concern to ensure teachers teach students for the future global economy (OECD, 2005). In Australia this politicisation and economisation of attention has manifested as movement toward systems of standards and

accountability for accrediting initial teacher education programs and graduating students. Much of this movement has not proceeded from 'evidence' of what teachers or teacher educators do, but rather from stereotyped media and political perspectives combined with globally circulating policy and practice. There remains a dearth of research in teacher education that is either in-depth or longitudinal (Murray et al., 2008), with much published work exploring policy or policy effects, or individual, classroom-based practices (see also Brennan & Willis, 2008). To examine the work of teacher educators is thus to enter into a highly politicised terrain, where performativity (Ball, 2003) is rife; a terrain where even the categories by which the work is described are standardised across disciplines as part of the restructuring of a national university sector. Reclaiming descriptions and analyses to understand an under-researched field of work is necessary, while also recognising that the field is itself dynamic, combining historically accumulated practices and change.

In this paper we put forward an argument for paying close attention to the materiality of practice, locating our analysis with a longstanding tradition of interrogating practice itself rather than ideas, policy analysis, or social critique of policy effects. Specifically, we locate ourselves within the critical-transformative tradition in studies of work and learning. In constructing this argument we treat initial teacher education as a culturally distinctive system of human psychological and practical activity, which overlaps with the work of other activity systems with related goals or outcomes – for example, other university faculties, schools and early childhood services, teacher employer authorities, teacher registration agencies, and university entrance and curriculum authorities. We report here an analysis of one aspect of Phase 2 of the Australian Work of Teacher Education (WoTE) project (see Nuttall et al. 2013 for a report on Phase 1 and other articles in this volume for further dimensions). This analysis takes a particular focus on the meanings of artefacts used by teacher educators in the course of their daily work as we observed and interviewed them about their work practices.

We begin by locating this analysis within a dialectical materialist understanding of the development of human activity. After turning to the methodological imperatives implied by a materialist analysis, we provide a series of examples of artefacts-in-use in initial teacher education and the respective meanings accorded to these artefacts by the teacher educators we observed and interviewed. Our aim in doing so is not to provide a comprehensive picture of the place of artefacts within systems of initial teacher education; such a quest is beyond the scope of a single article. Rather, we aim to make a case for *what is afforded epistemologically* when researchers pay attention to artefacts from a dialectical materialist viewpoint. As researchers and educators in initial teacher education, we are interested in forging a pathway between overly intra-mental analyses of the work of teacher educators (e.g. identity, values) and overly external analysis (e.g. policy critique) in the interests of transforming present practices. In the final part of the paper we argue that paying attention to how teacher educators engage with artefacts can help us understand the unity of psychological and social processes within dominant approaches to teacher education, as well as providing clues about how adaptation of artefacts can drive cultural change.

Dialectical materialist analyses of human activity

Our research is located within the growing tradition of studying workplaces through the lens of cultural-historical activity theory (CHAT). CHAT analyses of human activity draw on Marxist dialectical materialist understandings of change in human activity, most notably the work of L.S. Vygotsky (1896-1934) and his collaborators in post-revolutionary Russia. Vygotsky's aim was to develop a theory and practice of psychology grounded in a dialectical materialist ontology. This psychology therefore rests on three principal assertions: first, that present forms of human activity have arisen out of past forms in response to changed circumstances; second, that human practices are interdependent with psychological

phenomena, rather than independent factors that 'interact' with one another to drive human development. Established cultural forms within human activity, such as teacher education, are therefore not understood as fixed phenomena but as current instantiations of "dialectical relationships between continuity and change and the reproduction and transformation of social structures and relationships, underpinned by a complex chronology of development" (Ellis, Edwards, & Smagorinsky, 2010, p. 4). Third, the realist ontology of dialectical materialism asserts that the world exists outside of, and independent from, human perception. Psychological phenomena are therefore consequent upon our experience of the socio-material world into which we are born: matter precedes thought.

These understandings mean that artefacts take on a particular significance within cultural-historical analyses of work. Note that here we are understanding artefacts according to the dual definition proposed by one of Vygotsky's foremost inheritors, E. V. Ilyenkov (1924-1979): both as created objects, "constituent of objective reality, and one that holds no mysteries for the scientist" (Bakhurst, 1991, p. 181) and as external embodiments of human activity.

> Ilyenkov does not just mean that, when an artifact is created, some material object is given a new physical form. This is true, but something a natural-scientific account could capture. Rather, in being created as an embodiment of purpose and incorporated into our life activity in a certain way – being manufactured for a reason and put to a certain use – the natural object acquires significance. This significance is the "ideal form" of the object, a form that includes not a single atom of the tangible physical substance that possesses it (Ilyenkov 1979a: 150). It is this significance that must be grasped by anyone seeking to distinguish tables from pieces of wood. (Bakhurst, 1991, p. 182, emphasis in original)

Workplaces, including the workplaces of teacher education, are dense with artefacts, ranging from mission statements, policy documents, and online handbooks through to whiteboards, pens, and other classroom materials. These are the cultural means of teacher education. By paying attention to the significance teacher educators assign to these artefacts in use, researchers and teacher educators can together identify the meanings that inhere in these artefacts, and therefore the objects and outcomes that motivate teacher educators' work. As Engeström (1987) argues,

> [Vygotsky's] insertion of cultural artefacts into human actions was revolutionary in that the basic unit of analysis now overcame the split between the Cartesian individual and the untouchable societal structure. The individual could no longer be understood without his or her cultural means; and the society could no longer be understood without the agency of individuals who use and produce artefacts. (Engeström, 1987, p. 5)

The implication of this for the historically and culturally accumulating features of teacher education is that paying attention to artefacts, and thinking about how they can be actively transformed, holds out the possibility of overturning the sedimented forms of practice that continue to frustrate teacher educators, educational institutions, and policy makers.

Paying attention to artefacts in use as research method

Within the WoTE project internationally these understandings about the role of artefacts have been operationalised methodologically in a particular way. After appropriate ethics approvals were secured (including permission from Faculty Deans/Heads to observe and interview the participating teacher educators on their university campuses), we used an approach that WoTE

researchers have collectively titled 'work shadowing', summarised in McNicholl and Blake (2013):

> All participants were observed for a period of one working day by a member of the research team. Participants were asked to choose a 'typical' day for this activity (typical in terms of the work planned at that time of year) ... A member of the research team met the participant at the start of their working day and stayed with them until they left work. The researchers made field notes, including some near verbatim reconstructions of spoken interaction and took photographs to record in words and pictures the material conditions of participants' work, as well as the range of tools that were employed. (McNicholl & Blake, 2013, pp. 289-290)

Thirteen teacher educators across two universities consented to participate in WoTE work shadowing. In this article we draw from data specifically related to four participants, pseudonymously named 'Phil', 'Judy', 'Gina' and 'Alana'.

In the UK project, artefacts observed included lesson observation forms, marking schemes, a curriculum policy document, software for an interactive white board, puppets, large furry dice, a tent, historical artefacts from museums, and mathematical shapes cut out of coloured paper (McNicholl & Blake, 2013, p. 290). In the Australian project, we have observed similar artefacts and can add others, including bunches of keys, mobile telephones, diaries, boxes of books, food, small suitcases used to transport books and classroom materials, and discipline-oriented textbooks. As well as recording these artefacts in our fieldnotes, we took photographs of artefacts that were of particular interest either to the teacher educator or the researcher. This was supplemented by the researcher posing a 'Tell me about…' prompt to elicit discussion about the artefact. This ensured that the meanings inherent in the artefacts that

were assumed by the researcher were checked against the meanings actually held by the teacher educator.

In this approach, the artefact itself is not the object of analysis and no attempt is made to deconstruct the artefact in any textual sense. Rather, the artefact is understood as an external, material instantiation of intra-mental activity on the part of the teacher educator and therefore as also mediating the collective activity of teacher education, implying that the artefact has a shared meaning. An obvious limitation of our approach is that the meaning an artefact holds for an individual may be particular or idiosyncratic to that teacher educator. As McNicholl and Blake (2013) note, this tight focus also runs the risk that researchers fail to pay attention to broader features of the context that affect human activity:

> Thus, social class, gender, race and even the influence of one's own psychology are not afforded a 'distinctive ontological status' (Hartley 2009, 146), but tend to be subordinated within the configurations of an activity system. The potential of activity theory to function as a transformative tool may then be fractional if the broader character of human agency is not recognised in the analysis to have properties that originate independently of the expression of the system. (McNicholl & Blake, 2013, p. 287)

Within the WoTE project we have attempted to pay particular attention to the dynamic between individual and collective agency and the broader, super-ordinate features of teacher education in Australia at present, many of which we have outlined earlier in this paper. For example, an original impetus for the WoTE project, in both the UK and Australia, was the rapid reconfiguration of research expectations of university-based teacher educators during the last decade due to the impositions of regimes such as *Excellence for Research in Australia* and the

Research Excellence Framework in the UK. One attempt to connect this broader contextual reality and the experiences of individuals is presented in Zipin and Nuttall (this issue; see also Ellis, et al., 2013). But we acknowledge that paying attention to artefacts-in-use *per se* may not be sufficient to trace the effects of more subtle factors, such as gender and race, which are known to impact on practices of teacher education. These factors are, nevertheless, apparent in many institutionally-produced artefacts in teacher education, albeit often in the form of silences or omissions. An example of this is reported in Nuttall and Ortlipp (2012) in relation to supporting classroom teachers to anticipate and respond positively to the cultural diversity of teacher education students undertaking the teacher education practicum. The need to keep in mind the complexities and limitations of paying attention to artefacts is explained by their dual nature, as conceptualised within CHAT, both as 'things' that are considered 'objective' according to the natural sciences as well as having properties that are socially and culturally constructed (Kaptelinin & Nardi, 2006). These cultural meanings only become apparent when the artefact is in use or its use is described by the user. We now turn to a number of examples drawn from Phase 2 of the Australian WoTE project.

Examples from the 'Work of Teacher Educators' project

Inevitably, a great many artefacts in use were noted during the work shadowing of teacher educators. Since the role of cultural tools means that 'follow the artefact' is a maxim of CHAT fieldwork, we took digital photographs of artefacts and asked their users about the material infrastructure of their daily lives, including how these artefacts were used. Answers to these questions provided notably different details in relation to explanations of the teacher educators' work, when compared with other parts of their interviews and the self-reports of their work recorded through work diaries. The artefact 'pulled out' much which structured the daily life of teacher educators, and which might otherwise have remained invisible and unarticulated.

While we interviewed academics individually at this phase of the project, the following examples are of commonalities that appeared, demonstrating the ways in which the participants experienced work and shared interpretations of their institutions, the education sector, and the prevailing norms of the workplace.

Boxes, books, wheeled suitcases…

In several cases there was evidence of artefacts connected with moving offices. One teacher educator, who we call Phil in this account, showed us his office full of boxes packed for moving. A photograph from Judy's office, at a second university, showed labels for boxes that had yet to be packed (by her).

[insert Photograph 1 here]

Photographs from Judy's office from the same morning, but spaced some time apart, showed that her printer had 'disappeared' between morning arrival and mid-morning, taken by the technical staff on the grounds that the new office (still some weeks away from relocation) would have a different arrangement for shared printing. Judy reflected she would also have to give up her view in the move, as no-one in the new office location would have office windows – ironically described by her as "an equity measure".

Discussion about the boxes disclosed a deeper meaning: teacher educators' reliance on a further set of artefacts – mainly hardcopy materials such as books – owned by them but for sharing with student; in Photograph 1, above, these included Phil's edition of Darwin's (1859) *On the Origin of Species*, used for teaching science. Several teacher educators commented they had progressively downsized the scale of hard copy materials kept at the office, given the number of times they had moved; yet their – and our – offices are still filled with books. Judy

noted she had taken her books home and now brought them in, as required, in her trusty pull-along suitcase. Every office where we shadowed staff had a suitcase, trolley or bag for taking teaching materials to classrooms, which may be in a different building or another campus. Another colleague, who we call Alana, threatened to "show us her car boot", which she also described as her "office", used to move teaching materials from one campus to another and to file paperwork for all the meetings she attends, a filing system which lived permanently in her car boot.

At one level these artefacts – boxes, wheeled suitcases, and movers' labels – are evidence of the practical reality of busy teaching lives. But participants were aware of an even deeper meaning inhering in these artefacts: the paradox of universities providing new buildings (due to recent rapid growth and aging infrastructure) whilst downsizing space for academic and professional staff to mitigate lack of funding, was not lost on these teacher educators, who told us their classes are often larger than the classrooms where they are timetabled. Nor did they miss the contradiction that occupational health and safety concerns about facilities often trumped teaching design issues consequent upon the larger classes that have arisen from cuts to per-student funding in universities generally in Australia. The teacher educators we observed each owned collections of materials, reference works, and journals, rather than relying on the library or faculty provision of materials. Most of these collections are worth many thousands of dollars, and were seen by the staff as necessary to conduct their work, both teaching and research.

It is impossible for us to say whether this personal 'bankrolling' of core work also occurs in other faculties in the university; we also note that many teacher educators were formerly school teachers, who are often in this position, and may therefore have brought the habit from their previous workplaces. Nevertheless, the participants understood artefacts such as personal libraries, wheeled suitcases, and 'car-boot offices' not only as everyday artefacts

but as holding meanings related to decreasing institutional support for their work and increasing personal responsibility for workplace resources. None of the staff who were about to move or had recently moved enjoyed the additional work involved – or, indeed, their new offices – but they each saw moving as 'normal' in the sector.

Laptops, chargers, mobile phones…

Moving into smaller offices requires new arrangements for teaching materials, books, and journal collections, increasing pressure to use new technologies instead. Although reliance on books and paper continued for all the teacher educators we shadowed (for reasons we explain below), it was equally evident that ICT-related artefacts are changing the nature of teacher educators' work, even those who would prefer otherwise. In Photograph 2 we see the artefacts accumulated by Judy in order to move a laptop computer – keyboard, backup drive, mobile phone, plus all their cords, chargers and protective packaging – between home and campus, and between campuses, all carried in a pull-along suitcase.

[insert Photograph 2 here]

When we asked what these artefacts meant to the participating teacher educators, they spoke of the tensions in institutional rules and in staff-student expectations about the use of ICTs for access to teaching materials and processes. We observed staff taking considerable time to upload materials, including readings (to be compliant with copyright), unit guides, weekly class materials, and student assignments (both submitted and marked). As we discussed this work with the participants, we came to suspect that these processes are not as efficient as their designers would have us believe. In the past, staff would prepare a reader (assisted by administrative staff) or set a textbook and hand out a paper unit guide. Teacher educators now

have to search for electronic copies of materials and embed the relevant URLS into unit or tutorial guides – state and national curriculum materials, for example, are now provided entirely online – along with unit guides and readings. However, where there was no option for full wireless access in university classrooms for the teacher educators, or students' devices were found to not be adequate for the task, hard copies were required *in addition* to online materials.

Also, historical documents and many books and resources are only available (or usable) in physical form (e.g. maths and science materials, but also books and drama props) and most of the teacher educators we observed had their own collection of materials relevant to their disciplinary expertise. At the same time, they spoke of university libraries downsizing collections of hard materials through the move to online books and resources, so that classroom teaching increasingly relies on staff having sizable collections of materials for students to use, practice with, and analyse. Hence the need for shelving, suitcases, trolleys, car boots, and home storage, particularly for those who teach curriculum subjects. In noting the meanings attributed to these artefacts across several participants, the shift in the location, ownership and access to artefacts was evident to us as a set of unspoken rules on which teacher educators, and the accreditation of the courses they teach, increasingly relies.

The burgeoning field of studies of human-computer interaction emphasises that ICTs are not merely 'tools' akin to pencil and paper but that they are both an externalisation of human activity and a means by which to change that activity (Nardi, 1996). Teacher education students, as well as teacher educators, are assumed by universities to understand the potential of ICTs and to be IT-literate ("digital natives" according to participant Gina). Yet Gina also warned of the "danger of assuming students have good IT knowledge. Some students don't know how to upload material to the institution's learning management system, for example". Gina described how she got "landed" with helping students with these types of tasks because other lecturers were reluctant or don't know how to do this, which she described as "a kind of

learned helplessness" amongst staff. Yet even as she described this scenario to the researcher during work shadowing, Gina was resetting the settings on the online site for a unit of study to allow a student to upload an assignment after its due date. When questioned about this use of her laptop, Gina explained that many of the poorer students do not have high capacity computing devices, relying on mobile phones without large data plans, and on university wireless and computer labs to provide access to materials. For Gina, the meanings inherent in her laptop went beyond accessing the learning management system: for her, ICT artefacts hold meanings related to equity of access to higher education, and her ability to skilfully use her laptop was a relational and agentic act of 'rule bending' (Edwards, 2010) to make the system fairer for poorer students.

Judy noted a paradox in the increased use of new technologies: on the one hand, staff are expected to be available 24/7 to answer student and institutional emails; failure to do so can result in poor student evaluation scores on the regular student surveys. On the other hand, the building to which she is relocating is inaccessible to students because the security arrangements – doors accessible only by electronic fob, with students expected to ring ahead to ensure staff are there before phoning in from the locked door – are an impediment to student accessibility, as well as limiting staff-staff contact. Even as students have the capacity to reach their lecturers virtually via email at any time of the day or night, they are unable to knock on their office doors in the universities where we observed. Teacher educators such as the participants in this study have learnt how to use a variety of learning management systems, how to check student work using plagiarism-detecting software, and to experiment with pedagogies for teaching that, as Gina noted, were "never covered in the [university's IT] training", which was "only technical". This determination can come at a cost: two of the teacher educators we shadowed described how use of ICTs continues to aggravate long-standing musculoskeletal injuries, resulting in their laptops also holding potent meanings in relation to personal health.

Like their educators, preservice teachers are also expected to have a personally paid-for mobile phone, now essential when on practicum placement (Photograph 3).

[insert Photograph 3 here]

Gina noted it was no longer a requirement on students to contact a placement school if they are ill: the school did not give student teachers access to staff mobile numbers and the school telephone was no longer staffed before hours for students to phone in. In this scenario, Gina is positioned as a broker, using her phone to contact the school, as described in the following field note:

08.45 [Gina] mentions to me that she must remember to put her mobile phone on silent. I ask her how she uses it whilst in the school. She tells me students are expected to text her if they are sick or late, so that she can let their supervising teachers know, in case the message hasn't reached the teacher. She also mentioned that she has been "telling off" a student this morning "who does not communicate with her."

As with their collections of books and teaching materials, as well as the pervasive use of laptops and IT peripherals, mobile phones are artefacts that both retain and telegraph rich meanings in the work of teacher educators. They reflect the increasingly private economic investment teacher educators' must make in their work as well as the concentration of responsibility for liaison with students – previously a collective responsibility between students, universities and placement sites – in the hands of individual teacher educators. As in the WoTE study in the UK, teacher educators participating in the Australian WoTE project were responsible for extensive 'relationship maintenance' with placement sites (Ellis, et al.,

2011). We would go further, arguing that the relationship work enacted by teacher educators in the Australian WoTE project is increasingly carried out in isolation. In this scenario, teacher educators without recourse to widespread institutional discourses of student management must fall back onto individual, even paternalistic, discourses such as "telling off" students who do not comply. Their mobile telephone therefore holds meanings beyond ease of communication, becoming a hand-held 'command and control' device for student management.

Templates, templates, and more templates…

As with the UK WoTE study, the preponderance of templates for a variety of institutional purposes was evident in the Australian study. For example, determining whether a teacher educator is counted as 'research active' is now managed in many universities through standard templates. In the universities where the work shadowing for this study took place, time for research has to be 'earned' through evidence of 'productivity'. The quantification these templates are designed to achieve takes a particular form in teacher education, where there are few journals that have been included in 'quality' metrics and the citation systems developed for the laboratory sciences. And templates for workload calculations and research records take time and expertise to complete if they are to secure adequate work allocation from an institution.

These standardised online templates – whether for research, workload, teaching, or performance management – 'travel' across systems of activity (e.g. from research projects to university management), changing meanings as they cross system boundaries. As Zipin and Nuttall (this issue) argue, teacher educators have come to view such trends as instantiations of psychological processes of managerialism that result in an impoverished view of their scholarly work. In other words, managerialist meanings are embedded in the templates, thereby infiltrating academics' thinking about their scholarship. These templates have gradually

changed the culture of the workplace according to Judy, who told us, "It's crept up incrementally" and are taken for granted, despite being the subject of much "whingeing". The detailed planning required in one of the participating universities for attracting research time was the subject of much angst among teacher educators, who told us about efforts to cooperate to work out 'how to play the game' with the new form. Judy, herself an active researcher, laughingly (we think) suggested that perhaps the Vice-Chancellor was using the template to scare staff into accepting that they might need to become a teaching-only institution.

The templates we observed were also used as a basis for superficial forms of accountability; for example, Judy showed us a two-page checklist template (Photograph 4) that had to be signed off at three different levels of authority for a single unit guide, with the unit guide itself also recorded via a template.

[insert Photograph 4 here]

Administration associated with courses and units, email, course reviews, accreditation, student progress and travel was significant for all participants. As a consequence of reduced administrative support this administration largely occurs via email or by filling out electronic forms. Yet these templates also hold meanings for teacher educators in relation to what they do *not* record: for example, there are no templates that make visible marking of theses, student consultation, lecture and tutorial preparation, meetings for curriculum planning, and other activities that can stretch for weeks outside the teaching semesters. Perhaps inevitably, the Australian WoTE participants reported that much of their reading and most of their research writing occurred after hours. But this, in turn, requires self-provision of artefacts in the home – a suitable workspace and internet access as a minimum – and usually requires the movement

of computers between work and home, since home computers are not supported by university-provided software or technical support.

How can a materialist analysis help us understand and prompt cultural change in teacher education?

In the spirit of Marx's oft-quoted maxim from his *Theses on Feuerbach* (1888/1969), "Hitherto, philosophers have sought to understand the world; the point, however, is to change it", the aim of understanding initial teacher education as a distinctive form of human activity is not simply so that we can ascend to a more abstracted understanding of that activity; rather, the aim is to ascend to a *re-concretised* understanding of that activity, through which change – and therefore emancipation – is possible. This requires a deep engagement with how workers use cultural tools (including artefacts), how they create new cultural tools, and how they adapt existing tools in creative ways. Daniels (2001) has articulated the truly revolutionary implications of Vygotsky's theorising of the role of artefacts in human activity: if the psychological orientation of individuals is formed through their use of culturally-specific artefacts, then those psychological orientations can be changed and developed *by changing the artefacts.* In other words, humans "actively shape the very forces that are active in shaping them" (Daniels, 2001, p. 1). In this paper we have provided a glimpse of the work of teacher educators, at a time of significant change in the university sector, paying attention to the artefacts that mediate their psychological and practical activity. Examination of artefacts that mediate the work of teacher educators is an essential aspect of the WoTE project, enabling us to deepen our understandings of what teacher educators see as the objects of their work – and thus what might be open to change. So how might we transform teacher education by changing its artefacts?

One interpretation of our analysis of artefacts-in-use in the teacher education is grim. The 'rules' of initial teacher education are changing, both overtly and covertly, with locked

offices, templates aligned with key performance indicators on organisational plans, reductions in time for research, and pressure to comply with accountability and reporting measures. These are now constant but largely unchallenged features of the university workplace. The complexity of teacher educators' work is increasingly mediated by new forms of technology, centrally organised in each university, whether for teaching platforms, research (including access to libraries), or administration. Participants told us they could not complete their work in a forty hour week, even though a 1725 hour full-time work year has been enshrined in Australian courts, nor without personally paying for internet access and wireless devices such as mobile phones, hand-held tablets and computers.

We suspect this scenario is true for most academics. More specific to the field of teacher education, however, is the work associated with student teachers on placement, the networking required to keep abreast of constant changes in national policy and curriculum, and the increasing amount of personal investment required in resources for teaching and research. Moreover, the pressure to constantly 'prove' research eligibility (on standards skewed against the field) can be seen in templates and reporting regimes, and are experienced as surveillance, punishment, and lack of control over one's own work. Some of the historically-accumulated practices associated with teacher education – going out on placement or exploring teaching-related materials in large classes, for example – are being altered through the use of new technologies. However we understand this to be occurring without much underlying change to the rationale or norm of being a 'good' teacher educator, who spends time on students, knows the field, and has good relationships with placement sites. In such cases, while there are some shifts in relationships, identity, and practices, they are not seen as major cultural shifts. How, then, might teacher educators 'shape the very forces that shape them'?

As we indicated at the start of this paper, the first point to draw from a CHAT analysis is that paying attention to artefacts can help us understand the unity of psychological and social

processes within dominant approaches to teacher education. For example: Gina's values in relation to poorer students sit in tension with her university's expectation that the students will submit work on time, despite their difficulties in accessing the learning management system. Gina's agentic act of changing the settings on the unit website to allow work to be submitted late occurs at the point where her intra-mental processes and the social processes of university participation come into contact. Whatever we think of Gina's heresy, we can at least see that her adaptation of the 'approved' use of a particular artefact – her laptop – allows her desired outcome to be realised. Gina's case speaks to our aim of making a case for what is afforded epistemologically by paying attention to artefacts, since Gina's activity offers us a window into the complex nature of knowledge in and for teacher education. We suspect that similar processes of tool adaptation and rule-bending are legion in initial teacher education but that they occur peripherally, subversively, and outside the typical foci of teacher education research. Our first suggestion, therefore, is to pay closer attention to what is really going on at the interstices between person and institution, and learn from success. Here Dorothy Smith's (2005) institutional ethnography holds considerable promise for understanding the work that is being done by artefacts in teacher education, and how teacher educators nudge, subvert, and reframe artefacts to speak back to institutional and managerialist meanings. Such analyses could allow us to further identify the epistemological affordances of these template artefacts, albeit as they are taken up through different meaning and positional structures within teacher education.

A second point to draw from the cultural-historical tradition is that, as with Rogoff's (1998) 'three planes of analysis' of human activity (personal, interpersonal, and community), the artefacts teacher educators employ contain and convey meanings at a range of levels. This variability provides teacher educators with opportunities, if we can spot them. Research reporting templates, of the type described by Judy, may be understood by teacher educators as

imposing an impoverished view of what constitutes research work; a second meaning may relate to the overall concept of 'load' in the university workplace. Indeed, an individual may find multiple meanings inhering simultaneously in the template. The same template has, of course, distinctly different meanings for university managers, offering them a way to manage research expenditure, increase the teaching loads of 'non-research active' staff, and substantiate the institution's 'pre-tensions' (see Zipin & Nuttall, this issue) in the national university pecking order. These meanings seek to exclude other, more flexible and opportunistic meanings, but they do not have to be automatically taken up by teacher educators. An alternative meaning is that they can provide an opportunity to reflect collectively – as was the case in Judy's university, when colleagues got together to support each other in populating their templates – about how to present an account of one's academic identity in the context of overweening managerialism.

A third point is that, although the work world of teacher educators is pressurised, it is also full of relationships that are strongly valued by themselves, their colleagues and their students. CHAT understands persistent cultural forms, such as practices of initial teacher education, to be fundamentally collective and therefore distributed psychologically across groups of people. The evidence from participants in the Australian WoTE project is that managerialist use of new technologies is promoting isolation from colleagues, even as it promises greater connectivity. But relationships and collective consciousness can also be built through creative use of technology. As Nardi (2005) argues, mediated communication (e.g. via Twitter™, blogging, or Face Time™) is as much about seeking affinity and connection as it is about exchanging information. How might teacher educators capitalise upon the power of new technologies to speak back to the pressures of federal policy and funding shortages? CHAT views human activity as highly adaptive, able to see possibilities in cultural tools not foreseen by their originators. (The inventors of the mobile phone, for example, did not foresee

their capacity to be used to muster large groups of people in public places at short notice.) What creative uses or adaptations of new technologies might teacher educators employ to build community?

A final possibility is hinted at by Sannino and Laitinen's (2014) concept of 'forward anchoring'. These authors, also working in the CHAT tradition, use forward anchoring – literally a technique used by fishing crews to move their craft by throwing an anchor into the distance and pulling their boat toward it, as an alternative to staying fixed in one spot – as a metaphor for agentic work towards an imagined future. This metaphor points to the centrality in CHAT of desired outcomes in motivating collective work. What might such a future look like for teacher education? In which directions might its anchors be cast? In a field freighted with practices accumulated over a long period of time, it is difficult to imagine practices as otherwise. Britzman (2009), in her psychoanalytic take on teacher education, has described it as an 'impossible profession' because of the multiple processes of transference and counter-transference that occur in the teacher education classroom. This underscores the enormous effort the field needs to make to cast its anchor into the future, rather than hold to the past, in order to imagine what that future, with its new forms of activity and practice, might look like. The need for anchoring forward in teacher education in Australia is now urgent. One participant in the study was advised by a family member, "Stop whingeing or get out", and a number of participants in the Australian WoTE project told us they were considering leaving the field or retiring. Such decisions reflect on the loss of agency being felt by the field and for the university sector, and the consequent loss of balance across work and other parts of teacher educators' lives. But as teacher educators move their material worlds from place to place, in boxes, suitcases and car boots, from home to schools to campuses, they engage in practices of teacher education that universities do not see because they do not acknowledge their existence. These practices, and the meanings they hold for teacher educators, become visible when we pay

attention to such taken-for-granted artefacts. What opportunities and possibilities for practice might be imagined whilst institutions look elsewhere?

References

Bakhurst, D. (1991). *Consciousness and revolution in Soviet philosophy: From the Bolsheviks to Evald Ilyenkov.* Cambridge, UK: Cambridge University Press.

Ball, S. (2003). The teacher's soul and the terrors of performativity. *Journal of Education Policy, 18*(2), 215-228.

Brennan, M., & Willis, S. (2008). Sites of contestation for teacher education in Australia. Teachers and Teaching: theory and practice, *14*(4), pp. 295-305.

Britzman, D. P. (2009). *The very thought of education: Psychoanalysis and the impossible professions.* Albany, NY: SUNY Press.

Darwin, C. (1859/2006). *On the origin of species: By means of natural selection.* New York: Dover Thrift Editions.

Daniels, H. (2001). *Vygotsky and pedagogy.* London: Routledge Falmer.

Edwards, A. (2010). *Being an expert professional practitioner: the relational turn in expertise.* Dordrecht, The Netherlands: Springer.

Ellis, V., Edwards, A., & Smagorinsky, P. (Eds.) (2010). *Cultural-historical perspectives on teacher education and development*. New York: Taylor & Francis.

Ellis, V., Glackin, M., Heighes, D., Norman, M., Nicol, S., Norris, K, Spencer, I., & McNicholl, J. (2013). A difficult realisation: The proletarianisation of higher education-based teacher educators. *JET: Journal of Education for Teaching, 39*(3), 266-280.

Ellis, V., Blake, A., McNicholl, J., & McNally, J. (2011). *'The Work of Teacher Education': Final research report.* York, England: The Higher Education Academy.

Engström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research.* Helsinki, Finland: Orienta-Konsultit.

Kaptelinin, V., & Nardi, B. (2006). *Acting with technology: Activity theory and interaction design*. Cambridge: MIT Press.

Marx, K. (1888/1969). Theses on Feuerbach (trans. W. Lough). In *Marx/Engels: Selected works,* vol. 1, pp. 13-15. Moscow: Progress Publishers.

McNicholl, J. & Blake, A. (2013). Transforming teacher education, an activity theory analysis. *JET: Journal of Education for Teaching, 39*(3), 281-300.

Murray, S., Nuttall, J., & Mitchell, J. (2008). Research into initial teacher education in Australia: a survey of the literature 1995-2004. *Teaching and Teacher Education. 24*(1), 225-239.

Nardi, B. (2005). Beyond bandwidth: Dimensions of connection in interpersonal communication. *Computer Supported Cooperative Work, 14,* 91-130.

Nardi, B. (1996). Activity theory and human computer interaction. In B. Nardi (Ed.), *Context and consciousness: Activity theory and human-computer interaction,* pp. 7-16. Cambridge, MA: MIT Press.

Nuttall, J., Brennan, M., Zipin, L., Tuinamuana, K., & Cameron, L. (2013). Lost in production: The erasure of the teacher educator in Australian university job advertisements. *JET: Journal of Education for Teaching, 39*(3), 329-343.

Nuttall, J. & Ortlipp, M. (2012). Practicum assessment of culturally and linguistically diverse early childhood pre-service teachers. *European Early Childhood Education Research Journal, 20*(1), 47-60.

OECD. (2005). *Attracting, developing and retaining effective teachers - Final report: Teachers matter.* Paris: Author.

Rogoff, B. (1998). Cognition as a collaborative process. In D. Kuhn & R.S. Siegler (Eds.), *Cognition, perception and language* [Vol. 2, *Handbook of Child Psychology* (5th ed.), W. Damon (Ed.)] pp. 679-744. New York: Wiley.

Sannino, A., & Laitinen, A. (2014). *Forward anchoring and double stimulation: Rudimentary conceptualizations and agentive action.* Paper presented to the 4th International Congress of the International Society for Cultural and Activity Research, Sydney, Australia, 29 September to 3 October.

Smith, D. (2005). *Institutional ethnography: A sociology for people.* Lanham, MD: AltaMira Press.