

Evaluating the evaluation of research

Technological optimism

In **arq** 13:3+4, we asked the indulgence of our non-UK readership in devoting our editorial to the latest development in the UK government's efforts to quantify the quality of research conducted in universities. The REF, or Research Excellence Framework, will be conducted in order to apportion funding, reformulating the criteria of previous Research Assessment Exercises (RAE). Distinctively, the consultation document for the REF proposes quantifying the impact of research on business, the economy and social policy; and proposes testing the quality of research using bibliometrics, the counting of citations. The first four letters which follow concern the proposed REF and its controversies. A subsequent perspective by Sebastian Macmillan puts these responses in context by reviewing published commentaries on previous research assessment exercises (including those in **arq**), examining how architects have previously evaluated the evaluation of research.

Sudden impact?

Impact is the term currently being used by HEFCE to measure the influence of research outside the academy. Perhaps the most disturbing thing about impact is the aggressive nature of the word itself, defined as 'the action of one object coming forcibly into contact with another' and conjuring up visions of exploding missiles, fists in the face, bricks through windows, and cities decimated by natural disasters. It is this brute assertion of direct physical and forcible contact that I want to bring to mind as a way to start questioning the term, its rise to power and the long-term implications of its usage as currently defined for academic research.

On the one hand, it would be crazy for academics to argue against impact. Who would wish

their work not to be read, their patents not to be taken up, for people not to appreciate and respond to new ideas, and for buildings not to have an influence on the way we think and live both within and beyond the university? There are probably very few academics today who actively promote the isolationist notion of an ivory tower but, on the other hand, to ask that our work *must* have impact, that this impact can be measured, and that we should plan for our work to have impact even before it has begun is to devalue indirect thought, unpredictable action and intuitive encounter. To place emphasis on obvious responses to new ideas and to believe that these effects can be accounted for quantitatively is to misunderstand the way in which new knowledge and understanding is generated and transmitted and to ignore flashes of insight, moments of unaccountable inspiration, and intuitive leaps – the non-sequential and tangential way in which creativity and innovation flourish.

So although I am keen that research produced in the academy seeks out its audiences – those that are eagerly awaiting and those who are yet to be found – I take issue with the term impact as it has so far been defined by HEFCE, for a number of reasons.

On linear time: HEFCE'S REF proposal document is at pains to allow a longer timeframe for the inclusion of impact. Yet simply extending that timeframe, adding on five years or even ten, does not alter the fact that at present the term itself has been conceived within a linear conceptualisation of time, where cause has a direct and often predictable effect, and where there is no room for chance, synchronicity or magic.

On the concrete: emphasis has been placed on actual effects rather than any sense of suggestion, implication or association. There is no hint given that people might develop new thoughts and ways of going about the world in anything other than the most empirical and pragmatic fashion. Literature, music and art do not seem to feature in this paradigm where the obvious, the tangible and the direct dominate. The inspiration offered by dreams and memories is seemingly abandoned leaving a world which is as dreary as it is restrictive.

On numbers: the notion being put forward is that impact can be measured, and that it can only be measured using numbers – metric calculations and quantitative methods. The fact that the suggestions given for modes of evaluation in the recent REF document (Annex D, circulated in 2009 for comment) go no further than the phrase, 'as measured through surveys', suggests that little thought has been given to the richness and diversity of the full range of interdisciplinary methodologies currently being used for both producing and communicating, which allow for affect and emotion as well as the critical and analytic, and which include self-reflexive processes that are provisional, contingent, discursive, open-ended, taking the form of essays, poems, narration, dialogue, participation and interaction. The AHRC helpfully suggest that any assessment of impact must extend beyond the instrumental to include intrinsic benefits that are hard to measure and value. They urge that we need to identify impact first, and only then work out how to measure it, to avoid being driven by what can be

measured. They also advise that we include indirect and personal benefits as well as those that are more direct and public. I agree. Impact itself is an incredibly crude and reductive term. The word influence would be much better suited to describe the myriad of indirect ways in which new knowledge engages with audiences, extending and nuancing the capacity for learning, leadership, engagement.

On the loss of originality: the definition of research as a process which focuses on the production of 'original' investigation has been altered to one which seems to emphasise communication as strongly as, if not in place of, the generation of new knowledge. Let us compare the definition of research given in the guidelines for RAE 2008 to those of 2012 REF. In 2008, the definition read as follows: "Research" for the purpose of the RAE is to be understood as original investigation undertaken in order to gain knowledge and understanding'. The definition proposed for 2012 reads: 'For the purposes of the REF, we define research as a process of investigation leading to new insights effectively shared'. We witness here the removal of the term 'original', and the insertion of the term 'insight' instead, as well as the addition of the phrase 'effectively shared'. Insight is a rather beautiful term, and a wisdom that is only rarely achieved. It is something I value dearly, and which I do value being used here. But the context indicates that such insights are not necessarily to be enjoyed for their own sake, rather that they must be shared. For most of us who work in universities we do so precisely because we enjoy sharing our thoughts with students, colleagues and potentially with our readers, viewers and users. But if the addition of 'sharing' entails the removal of 'original', the most treasured principle of research, the cornerstone of academia, what is at stake? If we place as much emphasis on transmission (or consumption?) as we do on production, then what kind of cultural output might we expect to have produced 20 years from now?

On lack of clarity: there is also a great deal of confusion surrounding the definition of impact and its distinction from another key term 'significance'. While impact is defined as 'the full range of research-driven benefits to the economy, society, public policy, culture and quality of life (not

impacts on academia and scientific knowledge)', significance, which along with rigour and originality, is the third of the three criteria used for the assessment of research quality, is not formally defined in the document itself. One can find significance referred to in passing as 'the extent to which research outputs display the capacity to make a difference either through intellectual influence within the academic sphere, or through actual or potential use beyond the academic sphere, or both'. This is a reasonable statement. I do not take issue with 'making a difference' or with the suggestion that use might be actual or potential. Indeed, I welcome the reference to potentiality but what I find extremely unclear is the lack of distinction made between impact and significance, and to what this blurred boundary may point. Why does impact only include 'economy, society, public policy, culture and quality of life' but not academia, while significance encompasses that which operates within academia but also outside? And more confusingly, why is significance sometimes referred to as impact? Clearly the terminology has not been worked through rigorously enough. Given these two definitions - of impact and significance - it would be perfectly possible to produce research which did not make a difference within the academic sphere (since the statement on impact excludes the academic user, and the comments on significance explicitly state that the difference can be made in OR outside academia). Does this mean that rewards will come only or mainly to those who produce benefit outside and not within academia? To blur the distinction between the phrases significance and impact is one thing, it is confusing, as well as annoying, given that these are two of the key four criteria of research assessment, but if a lack of clarity produces a situation where it can be understood that it is no longer necessary for knowledge generated in the university to have any relevance in academia itself, this is much more disturbing.

On money: I wish to end by addressing the issue which, I believe, underlies the rise of term impact and provides the context in which impact must be understood - the present moment. With the so-called 'bailout' of the banks, we are left, for the foreseeable future, with an impoverished public sector. We have just witnessed the transfer of enormous amounts of public

funds into private ownership and the hands of the bankers whose incompetence and acquisitive behaviour brought us to the point of collapse, and for which they remain unaccountable and continually rewarded. We have seen recently the low regard with which this Labour government holds universities. Despite the amazing achievements of UK universities in the last decade or so, the rise of their reputations internationally and their capacity to generate income in a recession, they are receiving some of the harshest treatment in the public sector in the form of severe cuts which will force the closure of some institutions, result in the loss of jobs for many, and massively increased workloads for those who manage to remain in employment. The reason we have seen the emergence of the term impact is not necessarily because the Government is interested in the democratisation of knowledge but because universities are now required to refill the coffers emptied out by the bankers. Impact is a term that has been forced upon us as a result of the unethical behaviour of the banks, and the collusion of the government in those actions.

So if this describes how I see the cause of the current state of affairs, what am I suggesting needs to be done? The academic community has been divided over impact. Some have welcomed impact, finding there are real synergies with the paradigm of direct application the term suggests, others are finding ways of turning impact to their advantage, and yet others have argued that if we are recipients of government funding we should make ourselves useful to the government, but there are also those who feel that impact is an unwelcome intrusion on academic freedom. My view is that impact needs to be reformulated, not as a sudden action, delivered directly from the barrel of the researcher's gun like a shot of lead, but rather more like a shot of caffeine, the stimulation provided by a cup of coffee, or the radically altered view of the world offered by a shot of tequila. The reactions produced by caffeine and tequila provide more useful metaphors for describing the response to paradigm shifting research - the exceptional four star research we are all striving to generate - in emphasising influence rather than impact.

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Towards a more balanced assessment of value

Research universities in the United States suffer from the same narrowly utilitarian perspective that underlies the proposed Research Excellence Framework (REF) in the UK. We, too, find more financial support going to disciplines like engineering or medicine because of their ability to produce easily quantifiable results of benefit to business and industry. The major difference lies in the funding of our universities. The US government directly funds research, and has almost no control over the budgets of the universities. Of course, research funding helps support faculty, graduate students, facilities and equipment, and so universities less successful in securing Federal research have reduced capacity in these areas, which affects the overall budget of the university, but the effect remains much more indirect than what the UK government has proposed.

That does not mean the US research universities have an easier time of it financially. Our funding largely comes from tuition, endowments and – in the case of our public universities – state support. The latter, in particular, has proven to be highly unreliable of late as state governments struggle with rising healthcare costs and falling tax receipts. Most states in the US have steadily decreased the percentage of the state budget devoted to supporting their research universities, to the point where public funding often represents a very small fraction of the total budget of the university. Private donations and particularly tuition increases have had to make up the difference, to the point where many of the top public universities have moved closer to the endowment and tuition levels of the elite private universities.

This, in turn, has led to a widespread discussion in the US about the need for a paradigm shift in the support of our major research institutions. Some have called for the Federal government to directly fund the top public universities, arguing that their research benefits the entire country and not just the states that seem no longer interested or able to support such expensive operations. This, of course, could well lead us in the

direction of the UK, in which our Federal government would seek some quantifiable measure on which to base its funding decisions. Others here have argued that the public universities need to follow the private-university model, charging much higher tuition and then discounting it for students with financial need. That idea stems from the fact that the socio-economic profiles of students in the public and private universities in the US are largely the same, raising the question of why the government should subsidise the education of public-university students and not that of private-university students with the same financial capacity. US academics, in other words, do not (yet) face the situation of our UK colleagues, but we seem headed either in your direction, with much more central government control, or – more likely – in the direction of a private model of funding higher education, with the potential inequities that come with it.

That said, we share the dilemma of funding – whether by the national government in the UK or by each university administration in the US – flowing toward those disciplines that can demonstrate the most direct benefit to business and industry. What might our discipline do about it? I think the problem – and a possible solution – lies with Jeremy Bentham, still stuffed and seated in his mahogany case in the hallway at University College, London. Bentham's utilitarianism, with its attempt to quantify the value of everything according to what produces the greatest good for the greatest number, underlies the efforts of your parliament and our provosts to steer money toward those fields that do the best job of demonstrating their importance according to this utilitarian calculus.

This seems to leave more qualitative disciplines such as our own – along with the arts and humanities – in the dust. But I think we need to make the argument that John Stuart Mill, himself a utilitarian, made against Bentham. Mill showed how intellectual, moral and aesthetic pleasures create more happiness to more people than those that are more easily quantifiable. The arts and humanities would do well to follow Mill's example in the face of philistine politicians and Bentham-like bosses. Ample research exists, for example, showing how qualitative aspects of the physical environment – access to daylight,

acoustical privacy, temperature control, ergonomic comfort – affect worker productivity as much as new computer technology or management techniques. A growing body of research also shows how new technology, especially the digital technology so often vaunted by business and industry and so heavily invested in by universities, can confuse and distract workers, and even demand more labour and time than it saves.

We should, in other words, use research to make a Mill-like argument against the overly narrow interpretation of utility that seems to underlie the REF as well as the skewed investments sometimes made inside US universities. Mill used the effective strategy of having people imagine the world that Bentham's utilitarianism would create, one in which the greatest number would probably see physical pleasure as the greatest good and so likely put in place a hedonistic society that came as a shock to Victorian sensibilities. We might employ a similar strategy, using our ability, as architects, to envision possible futures to show the world that the REF would create were it faithfully followed. Were we to link our knowledge about the importance of qualitative phenomena in the physical environment with our ability to graphically depict a world that ignores such qualities, we would, I think, make real progress toward convincing politicians and provosts to make a more balanced assessment of value, one based more on the Mill version of utilitarianism than on Bentham's.

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REF impact and long trajectories

While we may all believe that our work in architectural history has impact, it is rather difficult to prove. We can claim to have published in a certain issue of a journal with a circulation of 20,000, but we have no idea who reads it, in which part of the world, or how seriously they have taken it, except for the occasional random conversation or citation. Articles later regarded as 'seminal' are only defined with hindsight because by then the seeds have grown, and the period of gestation may be long. It is no accident that a building has to

stand for thirty years before its value is defined by listing, and the same reputation assures its inclusion in the canon of historical works. This reputation depends crucially on publication and is assured by multiple appearances, books taking over where journals started. Buildings that remain unpublished are for the most part forgotten. Surprisingly little systematic work has yet been done on the effect of the architectural journals, but that achieved so far on the role of the *AR* and *AD* in post-war years shows, for better or for worse, an astonishing nexus of power and influence.¹ Monica Pidgeon, editor of *AD*, died recently in her late nineties, and her memorial service brought forth a veritable family tree of editorial assistants who have gone on to considerable influence, among them Peter Murray, Robin Middleton and Ken Frampton. It takes half a century to get a secure historical perspective, but yes, we can say that they had impact, enormous international impact that is only now measurable. Many branches of knowledge and culture work on this timescale, and it is only healthy that they should. The danger with the REF impact proposal is that it will privilege the easily measurable and short-term, diverting funding there and inducing a dangerous myopia. By the same token, of course, it will erode academic freedom and the independence of the universities.

Note

1. Andrew Higgott's *Mediating Modernism: Architectural Cultures in Britain* (London: Routledge, 2007) makes a good start. Steve Parnell at Sheffield is currently working on a Ph.D about the history of *AD*.

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Architectural research comes of age

Architectural research in Britain came of age in 2008. A sweeping statement, to be sure, and of course there was plenty of excellent research in architecture done long before then. But the last governmental audit – the Research Assessment Exercise (RAE) published in that year – marked a sea-change in the subject. For the first time ever, architectural research was shown to be as strong as any academic subject around, if not

stronger than most. For the first time ever, it could not be sniggered at in vice-chancellors' offices and senior common rooms. Look today at the relevant research pages of university websites for Bath, Edinburgh, UCL and Westminster, as examples, and you'll see the latest architecture results given prominence. That would never have happened before the RAE 2008.

Now all of this didn't stem from the RAE 2008 itself, but it undoubtedly made a difference. After a series of previous research assessment exercises in Britain from the early-1990s in which architecture had performed spectacularly badly, a sudden volte-face was achieved. A broader and more inclusive examining panel in RAE 2008 must have helped but this was by no means the main reason. What was truly different was that, for the first time, British architectural schools realised what they had to do to present their research properly. The winners were clear: architectural history and theory performed the best of all, especially in terms of authored monographs (yes, keep writing those books!). Design research featured for the first time and performed relatively impressively, especially in the London-based schools where a coterie of ambitious and talented part-time tutors had been drawn carefully into the research firmament in recent years.

In contrast, some established research areas were given more of a jolt by the RAE 2008, not least in environmental design/sustainability, which hitherto had seemed the main growth area in recent decades. What happened? There were a number of contributory factors but the main reason seems to have been an over-narrowing of the scope of much environmental/sustainable research under the guise of applied instrumentality. What was lost as a result were the wider issues and bigger questions in environmental/sustainable research, and thus it is one of the tasks of scholars in this area to open up their research projects to cultural and political issues to re-energise that particular field. Already we can see positive signs of this happening.

So is the proposed Research Excellence Framework (REF) – the successor to the RAE, and currently scheduled for 2013/14 – about to spoil everything? My view is that it won't, certainly not from what we have been told so far. Most of what is proposed for the REF is based explicitly on the RAE 2008, and it is

precisely the few aspects which are not – most infamously the supposed 'impact' component – which are causing the problems. So much ink has been spilled in pointing out the deficiencies of these 'impact' assessment proposals, above all the conceptual reductivism of assessing 'impact' on what is essentially an economic basis, that it would be like shooting fish in a barrel to have yet another pop at it. Instead, I am quietly hoping that 'impact' will have been so modified in scale and scope when it comes to the second iteration of REF proposals, currently being re-written, that we can put our energies elsewhere.

From the global perspective, there are far more important things that can come out of the REF process as a whole, and we should be pushing now for what its future contribution might be. For a start, the growing body of critique around architectural history and theory appears to be thriving. Never before have so many books been published in architectural humanities and the standard is rising as more and more schools set up research clusters in the area. We might today have no big blockbuster books in architectural history and theory of the order of *Pioneers of Modern Design* or *Space, Time and Architecture* or *Theory and Design in the First Machine Age*, but that isn't necessarily a bad thing, for we do have a broader and more diverse field. This has arisen because of the impact of critical theory and cultural studies, and the trend is likely to enrich debates about architecture for the foreseeable future at least.

Above all, the crucial new area that will emerge in coming decades is design research. Again, it might seem curious that design – the central, and indeed distinguishing, feature of the architecture profession and architectural schools alike – is not yet seen as possessing its own corpus of research. This is a deficiency which needs to be remedied urgently. This is not to say that architectural design hasn't for centuries been engaged in important high-end research – how else could architectural ideas have changed so dramatically over time, and been so hotly contested in all periods? – but what has been missing is the ability, or desire, to articulate the role of research in design. What are those aspects of design proposals, built and unbuilt, which explore and communicate architectural ideas beyond the scope of the actual project itself? How are such ideas

shaped, transferred, mutated, hybridised and tested out by further design projects? These and other questions have to be pursued and debated, and to do so we must encourage architects in practice and tutors in architectural schools to delve into them. For the forthcoming REF exercise there simply needs to be an expansion in design research activity above its meagre 5% share of all submitted architectural outputs in the RAE 2008; so this is where we should be placing our energies now, rather than overly worrying about the madness of trying to measure 'impact'.

I am pledged to do my bit. Like **arq**, *The Journal of Architecture* which I co-edit will continue to press the importance of architectural design as a body of learned and evolving ideas, and I am also about to launch the first book series on Architecture Design Research with Jonathan Hill and Jane Rendell from the UCL Bartlett School, and Teddy Cruz from the University of California at San Diego. Design research is still very much a nascent concept and there is no simple or ready-made definition of what it might be. But that's precisely what we need to be working on collectively, and so whether you teach or research in Britain, and thus need to keep an eye out for the REF proposals, or whether you live in lands beyond the REF's tentacles, I urge you to address this need.

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Agency and architecture

It was with interest that I read **arq** 13.2 examining agency in architecture, presenting material from the 2008 AHRA (the Architectural Humanities Research Association) conference at the Sheffield School of Architecture. Personally I'm interested in how digital technologies are altering notions of public space, and in turn transforming the act of architecture and its agency. Or, more succinctly, how software is transforming the hardware of physical experience. I have been presenting my architecture praxis via the website *agencyofarchitecture.com* since 2002.

In particular I enjoyed the later

parts of Cairns' introductory essay (pp. 105–108) where he discusses the concept of the post-human condition. This is the condition where I think agency in architecture becomes intriguing. Of course, as Cairns states, agency itself is a beguiling word, and has developed a series of distinctive meanings from the individual to the structural. This I believe is a hinge for thinking about the agency of architecture, rather than simply agency in architecture. When one combines the individuated with the systemic there is a new form of agency in architecture that deals with enabling and connecting architecture.

This idea falls into the realm of technological optimism and its equal dystopian other – think Gilliam's *Brazil* or Spielberg's *Minority Report*. But if we suspend our disbelief for a moment and consider everything as atomised and recombinant, pure simulation, then we can advance new forms of agency in our future synthetic environments. I promote three conditions – examined through the lens of digitisation – that will magnify the issue of agency within architecture: virtual design collaboration, embedded real-world sensing, and virtual environment inhabitation.

Architectural digital workspaces are continually transforming. Inherently, the push towards real-time shared information spaces is driving our software solutions to become seamless interfaces between humans at either end of the line, and at every node in the network. This connectivity has radical potential to alter the notion of designer/design teams and the franchising of new systemic design processes.

In coming years sensing technology will allow us to receive real-time feedback about every numerically translatable aspect of our environments. Architecture and its inhabitation will become informatics – from individual elements of a building to the individuals in a building. Everything recorded ready for future data-mining and analytics, which in turn will alter the future actions of people and spatial behaviour.

Of course the end game is virtual world inhabitation; where the true experience of architecture is solely through virtual world platforms or video games. This hyper-material model enables new forms of agency in both human and non human players. Architecture in this

scenario might remain a backdrop, or equally become a character designed with agency.

If I was asked whether a conference on Agency in Architecture held in ten years time would be any different, I would say 'probably not'. However the above conditions and the acquiescence of digital processes within the practice of architecture will be more advanced. We will be closer to Cairns' idea of a post-human condition and our inhabitation of synthetic environments will promote new forms of designed agency that blend the individual and the systemic.

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Nature and production entangled

The project 55/02 by sixteen* (makers) demonstrates the elegant lattice of a constructed object engaging the natural conditions of its surroundings (**arq** 13.3+4, pp. 200–219). Conceived as an intersection of contextual markers and orders, its production explores how human creations can have a dialogue with the natural world through means of production and design. Conceptual as well as physical moves in architectural and constructive language allowed the authors to produce a piece of architecture that not only speaks to its surroundings and visitors, but opens up a theoretical dialogue within the contemporary experimental mode of digital design and fabrication.

Embedded within the writing is a critical dialogue revealing and specifying the role of adaptation and tolerance in the work as it operates at multiple conceptual levels. The theoretical connection between the integral of 55/02 with its context, and the tracing of allowances in its production that emerge in the designed piece, are critical considerations in the current discussions of the role of digital fabrication in architectural practice. By broadening the traditional role of the architect, sixteen*(makers) engages practice as a means to explore application of theories and demonstrative creations, including the requirement to continue development through iterative learning processes, making



sixteen* (makers) pre-fabricated shelter 55/02 in Kielder Water and Forest Park, Northumberland, England



55/02, June 2009

practice a form of education and learning not a result of traditional or even habitual processes. This playful but thoughtful exchange of ideas reveals itself in the built work by reinforcing the ties of manufacturing as a functional and artistic endeavour with architectural concepts and manoeuvres.

The piece, as it developed within the landscape, hinges on the adaptive nature of the geometry of its design as a filter between the visitor and the visited, and the tolerance of the surroundings to the potentials stored in the highly engineered material such as plate steel. The development of steel as a highly controlled architectural material through the breeding of specific properties and abilities has focused its use into narrow vectors and applications. New processes emerging from the designer's ability to control previously hand-crafted techniques through precise

tools, both in the computer and on the shop floor, have encouraged steel to regain its experimental nature as a material of ductility both in properties and potentials. The tension embedded with the material is contained in the forms developed in the piece and released through specified cuts, folds and connections that tie the built form to its theoretical underpinnings and the connection to the surrounding park.

sixteen*(makers) engaged the first-order definition of the project through what can be seen as atypical but understandable techniques of programming, site analysis and design. A key factor in the link to the production process was the emphasis on the indeterminate nature of construction through creating an inexact design that retained a degree of flexibility. Through an early recognition of the potential evolution of the second-order

tuning to come into the fabrication and assembly process, adaptation becomes a key theoretical tool for the development of the refinements that later help define the project through connections to locality, material science, manufacturing processes and means of assembling the piece in situ. The allowance for 55/02 to develop and evolve in relation to its site and process through a sensitive design programme are key to its success as a celebration of its locus and realisation.

Adaptation and tolerance clearly inform the design, creating a link from nature to built work that oscillates between object and background. 55/02 is an essay in the use of adaptation and tolerance as a linked production process from the conceptual design until the realisation of a complete work, informing contemporary work in architecture in relation to contemporary modes of constructive practices. sixteen*(makers) has produced a demonstration of the simultaneous unfolding and entanglement of our means of production with nature's modes of being through clever and thoughtful design and thought.

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