

# The Unintended Consequences of Using Direct Incentives to Drive the Complex Task of Research Dissemination

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## Abstract

Universities have used an array of incentives to increase academic publications, which are highly rewarded in the South African higher education funding formula. While all universities use indirect incentives, such as linking promotion and probation to publication, the mechanisms used in some institutions have taken a very direct form, whereby authors are paid to publish. This process has paralleled a large rise in publication outputs alongside increased concerns about quality. Significantly, there are ethical questions to be asked when knowledge dissemination is so explicitly linked to financial reward through the payment of commission to academics. Based on an analysis of institutional policies and data from an online survey and interviews with academics from seven South African universities, we argue that when money is the main means used to encourage academics to contribute to knowledge, numerous unintended consequences may emerge. These include a focus on quantity rather than the quality of research, a rise in predatory publishing, and resentment among academics. We argue that incentives, in particular direct payment for publications, undermine the academic project by positioning publications in terms of exchange-value rather than their use-value as a contribution to knowledge building.

**Keywords:** funding formula; quality research; financial incentives; knowledge economy; predatory publishing

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## Introduction

At the end of 2019, the Department of Higher Education and Training (DHET) released the report of the independent assessors of the University of Fort Hare (DHET 2019a, 16), which includes the following conclusion:

In the academic sphere, we also found some perverse incentives. For example, the Research Incentive Policy allows substantial payments for research outputs to be made to academics—not into a research account, but into their personal bank accounts, on top of their regular salary. ... The university has paid out more than R86m in research incentive money into personal bank accounts since the beginning of 2014. Currently, the UFH research income from outputs is about R45 million p.a., of which about R18m p.a. is paid out directly to researchers. In other words, of the order of 40% of the university's output-based research income goes into the private bank accounts of academics. Fourteen professors have each been paid extra income of more than R1m in this way since 2014. The highest amount paid out to an individual over this time is R2,64m. The risk of such direct payment of research incentives is obvious: that academic quality may be sacrificed in order to increase quantity and throughput.

This report is referring to a practice that exists in many South African universities. In this article, we consider the effects of paying direct incentives for publishing and argue that there is indeed the possibility that academic quality is sacrificed in the interests of receiving the incentive.

It is important to acknowledge that incentives are not inherently problematic, and that all social activity is incentivised in one way or another (Holloway 2010). In universities, like many other institutions, the rewards are often quite explicit. Salaries are earned for undertaking various teaching, research and community engagement activities, and promotions are awarded for increasing one's participation in these.

Academic work results in many outcomes, but perhaps none are as explicitly valued as publication. It is thus not surprising that various incentives are attached to this activity in universities across the world. In the United States of America (US), publishing is the central requirement for tenure (McGill and Settle 2011) and in the United Kingdom (UK), it is the dominant measure in the national Research Excellence Framework (Townsend 2012). In almost every university, publication is used as a key measure in probation and promotion processes, and is often the means whereby departments are able to bid for institutional funding. However, as the economists tell us, where there is competition and incentives, we are likely to see unintended consequences emerging as individuals learn to “play” the system (Muller 2017).

Harley (2017) asserts that academic work is increasingly conceptualised for its exchange-value rather than its use-value. This means that from the point of view of value, what matters is quantity and not quality or purpose. Academic publications in such a context have the potential to become a metric for personal gain more than a means of knowledge dissemination, with all the ethical implications this shift brings. This

article looks at the South African context to argue that while all forms of incentive may have unintended consequences, where incentives have been monetised and authors are directly and individually rewarded for their publications, we see exchange-value thinking dominating our understanding of research activity.

Muller (2017) and Tomaselli (2018) both use the economic concept of rent-seeking to reflect on the effects of incentives for various academic activities such as knowledge dissemination. Rent-seeking is the process whereby individuals and organisations (such as academics and universities) maximise the opportunities offered by actions of the state to earn “rent” that is greater than they would earn in a competitive market. Muller (2017, 63) suggests, “Arguably, the most blatant and costly form of rent-seeking behaviour in South African academia relates to the publication subsidy scheme administered by the national department of higher education and training (DHET).”

Research on the impact of financial incentives on the quality of publications shows that increases in publication counts parallel increases in low-impact and local journal publications (see for example Butler 2002; 2003; Vaughan 2008). Woodiwiss (2012, 424) reviews the literature on South African responses to funding for research publication and shows that unless such rewards are explicitly linked to (the contentious issue of) the quality of publications, the effect is often that of (1) salami-slicing, where data that merits a single publication is spread over many, (2) increases in publication in in-house and national journals over international ones, and (3) the preference for low-impact journals in which it is perceived to be easier to publish.

In a use-value conception of academic publishing, incentives include participating in the dissemination of knowledge, contributing to a field, a commitment to knowledge production and a sense of attending to problems that the relevant field deems legitimately concerning (Langa 2015). In an exchange-value conception, the incentive to publish may be more individualised and direct, such as professional status and career enhancement. It is unlikely that any social activity is conceived of only for its use-value or its exchange-value, but rather it is always some combination of the two. In looking at the system of incentives in South Africa, we raise concerns that many current institutional processes privilege the exchange-value to the detriment of the use-value of academic publication.

## Pressure to Publish in the International Context

The pressure to publish is experienced around the world with an array of negative consequences. Barbour, for example, looked at the rise in problematic publishing behaviours internationally that occurred as publications have taken on a more “direct monetary value in terms of increased salaries, bonuses and jobs” (2015, 1225). She identifies scams that range from fake reviewer reports to the take-over of whole journals publishing articles that fall far beyond their area of specialisation. Tjink, Verbeke, and Smulders (2014, 67) found that 72% of Flemish researchers reported that publication pressure was “too high” and showed a strong correlation between such pressure and

scientific misconduct. Adeleye and Adebamowo (2012) found that in Nigeria there is a significant degree of fabrication, falsification, and plagiarism in academic publications, and they argue that a lack of knowledge of research ethics coupled with pressure to publish enough papers for promotion were at the heart of this phenomenon. Shah et al. (2018) reported increased incidents in India of “honorary authorship” among academics, that is, the inclusion of an author on an article whose contribution to the article did not warrant authorship (2018, 187). In South Africa, it has been found that the majority of academics find it difficult to apply authorship criteria and there are high levels of disagreement concerning who should be included as a co-author and in which order (Breet et al. 2018). There is also evidence of incidents of plagiarism whereby academics draw on scholarly work of others without acknowledgement or they republish their own ideas and concepts without appropriate citation (Thomas and De Bruin 2015).

More broadly, it has been argued that the tendency to reward the *means* of knowledge dissemination, that is, academic publication, without a nuanced consideration of whether it is achieving its *ends*, which is the sharing of knowledge, can result in quantity being privileged over quality. “The tendency within science to reduce the impact of science to that which is easily quantifiable and optimized—namely, publication and citation in internationally recognized journals—is strong” (Neff 2018, 199). The pressure to publish has taken a particularly acute form in South African higher education since the country emerged from the academic sanctions that isolated it during the apartheid era.

## Research Funding in a Differentiated South African System

The South African higher education system suffers from both low research productivity and relatively small numbers of postgraduate graduations, and both are unevenly distributed across the university types. In 2017, the six universities of technologies (UoTs) produced 5.8% of research publications, the seven comprehensive universities produced 20.55%, and the 12 traditional universities (excluding Sol Plaatje University) produced 73.65% of the country’s research publications (DHET 2019b). This differentiation by institutional type is shadowed by a different kind of differentiation: differentiation based on institutional history. The five historically white universities (that is, Stellenbosch University, the University of Cape Town, Rhodes University, the University of Pretoria, and the University of the Witwatersrand) produced the highest publication output per capita,<sup>1</sup> ranging from 1.8 to 1.43 units per capita (DHET 2019b), though the University of KwaZulu-Natal, an institution formed through the merger of an historically white and historically black university, disturbs this trend with a per capita output of 1.51 (see Table 1 below).

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<sup>1</sup> Research output per unit capita is a measurement indicator for the number of research outputs produced in a South African university. It is calculated by measuring the total number of all research outputs (publications and postgraduate graduations) by a university and then dividing that total by the total number of permanent academic staff at the university (DHET 2011).

**Table 1:** Publication output (i.e. books, published conference and journal publications) 2017

<b>University</b>	<b>Research publication units</b>	<b>Per capita publication unit</b>
Rhodes University	579.04	1.80
University of the Witwatersrand	2009.58	1.68
University of Pretoria	2062.94	1.67
Stellenbosch University	1882.53	1.63
University of Kwazulu-Natal	2028.80	1.51
University of Cape Town	1731	1.43
University of Johannesburg	1741.41	1.41
University of Fort Hare	414.66	1.14
University of the Free State	995.22	1.00
North-West University	1300.04	0.86
University of the Western Cape	482.98	0.73
University of South Africa	1283.50	0.71
Nelson Mandela University	389.08	0.64
University of Zululand	191.77	0.61
University of Limpopo	315.68	0.56
Durban University of Technology	259.86	0.45
University of Venda	176.19	0.39
Central University of Technology	107.22	0.35
Tshwane University of Technology	321.51	0.33
Vaal University of Technology	126.76	0.32
Cape Peninsula University of Technology	266.01	0.30
University of Mpumalanga	23.19	0.26
Sefako Makgatho Health Sciences University	94.38	0.15
Walter Sisulu University	74.08	0.13
Mangosuthu University of Technology	23.22	0.12

Source: DHET (2019b, 47)

The need to address the highly uneven nature of the higher education landscape was at the forefront of the agenda when the democratic government came into place in 1994, and various strategies, such as institutional mergers and the allocation of some redress funding, have been implemented over the past two decades to this end. Funding initiatives such as the Teaching Development Grant and Research Development Grant (now collectively the University Capacity Development Grant) have seen the Department of Higher Education and Training spend billions of rands to achieve parity of outcomes between institutions in both teaching and research endeavours (Moyo 2018).

While attending to the legacy of apartheid in the sector, there was a concomitant need for South Africa to navigate its participation in a globalised order. With the rapid entry of South Africa into the world arena in the early 1990s came a desire by the government

to increase research output so that South Africa could play its role in the “knowledge economy”.

The “knowledge economy” refers to the premise that the economy is largely driven by the innovative development and use of knowledge. Universities are then perceived as key players in economic development through knowledge production and dissemination, and through the development of highly skilled human capital to sustain such productivity (Bloom, Canning, and Chan 2006; Castells 1994). There are many arguments in the literature that suggest that this has had the effect of conceptualising knowledge as “an intangible commercial good” (Tomaselli 2018, 2) that can be marketed for economic benefits, rather than as a public good (for example, Shore 2010; Slaughter and Rhoades 2004).

This particular way of conceptualising knowledge has increasingly come to dominate the higher education sector across the world (King 2004; Vaughan 2008). In many countries, policies are dominated by discourses about the role of universities in the provision of immediate economic benefits (Boulton and Lucas 2008). South Africa is no exception as higher education policies increasingly focus on an economic role and function (Badat 2009). While the university can indeed play a significant role in the economic development of a country, Allais (2014) contends that universities form only one small part of multiple complex social structures that affect the economy, many of which actually constrain the impact higher education can make. Furthermore, focusing only on the economic purpose of universities undermines the inherent function of the university as an important space for the development of humanity’s critical and creative ability (Collini 2012; Higgins 2014; McArthur 2011). Despite such contestations in the literature, the discourse of the knowledge economy continues to be embraced and has led to various structures being put in place to drive knowledge production, such as the funding incentive by the Department of Higher Education and Training.

The formulations in *Policy and Procedures for Measurement of Research Output of Public Higher Education Institutions* (DoE 2003) were used to determine how research was to be funded in the newly reconfigured higher education landscape. The subsequent national funding formula included strong financial incentives to institutions to produce research publications in an attempt to increase the country’s participation in this new “knowledge economy”. Block grants are allocated to each university annually through a complex formula, which includes student enrolments, graduations, and research outputs, among other factors. The research output portion of the calculation includes funding for each accredited publication produced. This is important because it shows that the payment to universities for accredited publications is only one part of the larger block grant, which is used to run all aspects of institutions, covering everything from salaries to buildings and equipment.

The DHET uses a combination of international lists to determine what constitutes an “accredited” publication along with its own list of South African journals that meet

various criteria. For each publication in such an accredited journal by its employees, the university accrues an additional funding unit within its block grant. The ability of its employees to generate a number of publications is thus important for the revenue of the university.

## Incentives for Individual Researchers

In response to the direct financial benefit that universities receive in the block grant for publications by their employees, many institutions have established systems through which direct financial incentives are paid to researchers. Some academics believe that offering such rewards to individuals is the implementation of the “DHET subsidy disbursement scheme” (Tongai 2013, 3) and argue that the DHET funding system is “intended” to provide direct financial reward to individual researchers (Woodiwiss 2012, 423). But the DHET has recently indicated that while it intended the incentives in the block grant to drive universities to increase research outputs, it did not intend institutions to translate this into direct incentives to individual researchers. The research policy states: “The Department [of Higher Education and Training] subsidises institutions and not individual authors or academics. Institutions should be cautious of directly incentivising individual authors as this practice is promoting perverse behaviour in some cases” (DHET 2015, 5).

Despite such cautions, most universities continue to offer personal rewards for accredited publications and even for completion of postgraduate supervision. Only two universities, the University of Cape Town and Rhodes University, do not offer individual incentives to those researchers who publish in accredited outlets, electing to use the bulk of this funding for research development more broadly. It should be noted, however, that in these two institutions, as in all other universities, research output remains a key criterion for promotion, and so there are other exchange-value incentives, though these are less direct than the individual payment.

The structure of the individual incentive schemes varies by institution. As an illustrative example, consider the following extracts from policies at the University of Fort Hare and the University of Venda:

The University will pay an incentive amount of R20 000 for each research accredited unit (publication and postgraduate output) that is approved by the Department of Education on the Research Output component of the University subsidy.

The incentive will be paid once the Department of Education approves the audited number of units.

The person receiving the incentive will have the choice of taking the full amount as cash (which will be put on the person’s salary and taxed) or have all or a portion of the amount placed in a research account in their name. (University of Fort Hare Research Policy 2008 [implemented at the time of writing])

A subsidy from publication output, an amount determined annually is received for publication output by University of Venda staff. 50% of the subsidy received from the Department of Higher Education and Training will go to the University's Research and Publications Committee account. A researcher is entitled to 35% which goes to his/her account to be used for research purpose after approval by the Director of Research and Innovation or the Research and Publications Committee and 15% will be paid to a researcher as an honorarium. (University of Venda Research Policy 2010 [implemented at the time of writing])

The amount per unit paid by the DHET varies year on year. In the 2017/2018 academic year, the amount for a single unit, such as a single accredited journal article, was R108 000. At the University of Venda, to continue the example, this would result in R37 000 going into the author's research account and R16 200 being paid into the author's salary in the case of a single-authored article. For a co-authored article, the amount would be divided between them. The DHET would similarly divide payments between institutions where the co-authors come from multiple universities.

## Questioning Causal Claims

The implementation of the funding incentive as part of the block grant has correlated with a rapid increase in research publication output in the South African higher education sector (CHE 2016; DHET 2013; Lee and Simon 2018; Pouris 2012). At the time of the implementation of this formula in 2005, the number of publication units for the sector was 7 230; in the years since, publication output has risen dramatically, with 18 872 accredited publication units being recorded for 2017 (DHET 2019b). This impressive increase suggests that the reward to institutions has had the desired effect, especially given that the number of academics in the system only increased by 12% in the same period (CHE 2016; DoE 2006). However, such claims that the rise in publications in South Africa is caused by the payment of incentives by the DHET need to be slightly tempered by an awareness that this is an international phenomenon, as academic publishing worldwide has increased by 300% since the end of World War Two (Bornmann and Mutz 2015).

As to the whether the incentives being paid directly to researchers, as opposed to broader incentives related to promotion, have driven increased outputs in South African universities, it should be noted that the increase in research productivity has taken place at all universities *including* Rhodes University and the University of Cape Town, despite these universities not implementing such individual financial reward systems. This raises the question as to the causal effects of direct incentives being paid to individuals.

## Methodology

The article emerges from a recently completed study (Muthama 2019), which investigated the conditions enabling and constraining the production of research in the Historically Black Universities (HBUs), as part of a larger project on institutional



differentiation in South Africa.<sup>2</sup> One of the findings of the study was that the use of research incentives as a driver of research has had both enabling and constraining effects on research production, and it is this finding that is explored in more detail in this article.

We draw on a social realist approach in this research (Archer 1995; 1996), which considers events and experiences in the social world as context bound and emerging from the complex interplay of structural, cultural and agential mechanisms, many of which may not be readily visible to those involved in such events or having such experiences. Structures, in social realism, refer to institutions, systems, positions, roles and so on. Cultures refer to values, ideas, theories, beliefs, perceptions and so on (Archer 1995). Agency refers to the ability to take action in one's own interest (Archer 1995). The social world is understood to come into being through the complex interplay of these domains. Identifying how each of these domains enable or constrain an event, such as the dissemination of knowledge, means moving beyond assumptions of simple causal relationships.

Structures are often used in institutions to drive change. Policies, committees, and so on may be introduced within universities with the intention of driving people to act in certain ways. In this study, we can see that incentives were introduced to drive increases in publications. But the messy nature of the social world means that we need to be careful in according to structures full causal powers, because other variables are always at play (Archer 1995). Even where the link between a structure and an emergent event can be tentatively tracked, the same structure may play out quite differently in another context where other variables are in effect.

In the case of this study, to be able to understand the emergent events and experiences of research production or lack thereof, data was collected from all seven HBUs (as so designated by the DHET). HBUs have particular constraints on research production (Bozalek and Boughey 2012; Muthama and McKenna 2017). They were largely prevented from undertaking research or offering postgraduate studies during the apartheid era (Bunting 2002). They also worked under severe financial constraints whereby they were allocated very restricted annual budgets and expected to utilise them within the year without any scope for long-term planning or for interest-accruing investments (Moyo 2018). Moreover, the positioning of HBUs in rural areas, with the exception of the University of the Western Cape, has also had an impact on the capacity of these institutions to attract and retain researchers (Bunting 2002).

Ethical clearance for the study was first sought from the institution where the larger team project on institutional differentiation was lodged and then from each of the seven institutions where data was collected (more detail can be found in Muthama and McKenna 2017). The first form of data consisted of any institutional policies that related to research. Where we refer to such documents, the institutional identity is given as these

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<sup>2</sup> NRF grant number 876460 and 94969

documents are in the public domain and thus readily identifiable. Second, an online questionnaire was sent through the heads of research to academics in these institutions. One hundred and fourteen respondents completed the questionnaire. While this is a low response rate given the potential number of researchers at these institutions, the responses represented all seven institutions and a very wide range of faculties. The survey included both closed and open questions, many of which elicited lengthy and rich responses. The questionnaire was anonymous, and we assured participants that we would reveal neither their identity nor the identity of their specific institution. The last item in the questionnaire requested that those respondents willing to be interviewed submit their contact details separately. We undertook 40 interviews with academics and heads of research (DVC: research, directors of research, senior research manager and so on) from all seven universities. Participants are cited as AC1 to AC34 (for academics) or as HoR1 to HoR6 (for heads of research). Forty interviews may well not constitute a representative sample, particularly given that more productive researchers may be more likely to self-select to be interviewed about their research production, but we believe that the extensive nature of their inputs (the interviews lasted between half an hour to over an hour) provides useful insights on this complex phenomenon.

## Incentives Are an Expectation

Across all the data emerged a broad understanding that the provision of incentives to researchers as a reward for publications is an expected practice, and there was also a strong belief that the payment of incentives had a causal relationship with the increase in publications.

The publication record at [University of XYZ] has completely shifted, if you look at the ten-year stretch, all of a sudden it is very high. So definitely there are incentives which are put in place to make this possible. (AC29)

Look, if there were no incentives, I think a lot of people wouldn't take part in research. (AC14)

... with finances in difficult economic times, you can just do more. Because you feel motivated, you can even take students with you to conferences, you can also open up worlds for them, and you publish of course with them so that they also be mentored and follow that path. So, everything around incentive, it's like when you have a snowball effect, they say you also need something in order to make something and that's also true at the university. The more you put into people you will definitely see the rewards. (AC21)

Here we have some incentives for each and every publication that you get, your researcher gets some proportion ... in my opinion, this can actually motivate some researchers. (AC16)

... we are improving and increasing the number of the graduates and in publication and so I do see tangible impact of these incentives. (AC9)

This accords with Pouris's (2012) claim that publication incentives in the South African higher education sector encouraged the increase in publication output. Some of the participants linked this causal relationship to their particular type of institution.

The previously historically disadvantaged institutions you find that they provide incentives for research publications and for the supervision of students, then that ... like adds more output. So, the incentive is also working to increase the output. (HoR1)

There were a few individuals who indicated that the payment of incentives did not encourage an increase in research output because the incentives were not sufficient.

According to my view they [the incentives] are very minimal because you are expected to produce one paper in five years and I am saying that cannot be expected to be incentive or something that can drive research. (AC10)

Dominant across the data was the view that incentives were the norm and were an important driver of research productivity. But there was also reference in the data to a few unintended consequences of the direct incentive process, as we will now discuss.

### Incentives Drive Quantity, But Not Quality

The pressure to publish combined with incentives for publication can drive a focus on quantity and not quality. This has been argued in various publications (see, for example, CHE 2016; Lee and Simon 2018; Tomaselli 2018) and emerged strongly in our data.

A lot of academics that I know go churn the papers out, but then they've got to find a journal for it to go to. And it's very difficult. ... So normally what they do is they send it to journals that will take anything. (AC 13)

Many academics articulated the goal as increasing the number of publications rather than making contributions to knowledge. This was particularly evident in the data in a lack of concern about where their work was published as long as it was "on the lists" to get the financial rewards.

Whether you are publishing in a journal that has high impact factors or low, you see, here we don't care about that. What we care is whether that journal gives the university money. (AC 19)

Accreditation for subsidy was understood as the measure of quality rather than a consideration of how significant the research contribution is. The 2014 University of Zululand policy on the administration and management of research funds explicitly uses this language:

Special recognition should be given to researchers who have a record of producing subsidy-generating outputs and who have clear research plans for generating further

subsidy-generating outputs. They should accordingly have an advantage when research funds are allocated in certain categories.

A few participants spoke of their fears on this issue, indicating that there is little concern about where the publications occur, what they are about, or who reads them, as long as they “count”.

But then of course there is a point of quality that is also important, because it’s where you are publishing, and this is something I have taken seriously. I just don’t publish anywhere. I categorise where I want to publish because it leads to that other incentive of, I want my work to follow me, I don’t want to be known as the guy who just published in the journals that were easy, you know. (AC14)

The DHET has recently cautioned universities to “remember the importance of research integrity when submitting their claims and are urged to focus on maintaining quality of research” (DHET 2015, 6). But as Muller (2017) points out, such appeals are unlikely to be successful. Indeed, it may even be considered obtuse for the DHET to make such appeals as it created the national system of incentives now seen to be “undermining cultures of ethical practice” (Muller 2017, 64).

The exchange-value discourse with its focus on research as measurable units arguably has acted in what Archer terms “complementarity” (1996); that is, drivers in the domain of the structural align with drivers in the domain of the cultural, emerging in the proliferation of quantity over quality. There is also a concern that such complementarity makes institutions particularly vulnerable to predatory publishing, an issue to which we now turn.

## Use of Incentives Encourages Predatory Publishing

Institutions have been warned by the DHET to “safeguard against predatory journals whose main purpose is financial gain and not quality of research” (DHET 2015, 7). Predatory publishing refers to the “publishing of academic papers without necessary controls, such as appropriate peer review and professional copy editing to ensure high-quality research” (De Jager et al. 2017, 35). But the pressure to increase publications, rather than to enhance knowledge dissemination, has created a context that has allowed predatory journals to flourish in South Africa, as emerged in the data.

Because of the incentives ... you see a trade-off ... some academics when they are starting they start off by publishing in ... predatory journals that are just like after money, they are not really following the peer review processes. ... So, in the way that kind of competition, that kind of pressure could also put like academics in a tight fit where it compromises the quality now also of the output. (HoR1)

The university lost a huge amount of revenue because ... staff had published in this journal. And then of course it was taken off the accredited list, so we lost a huge amount of revenue there. (AC13)

The problem with predatory publications is that they do not get read or cited, and so they fail to contribute to knowledge dissemination (Hedding 2019; Le Grange 2019; Maistry 2019). It can be argued that it is an exchange-value culture that makes it possible for such publications to flourish and, therefore, there is a need to nurture a research culture focused on the ends of knowledge dissemination and not the means of output (Muthama and McKenna 2017). There is also a need for the Department of Higher Education to continuously interrogate the quality of their list of accredited journals, which in the past has been found to have weak criteria for selecting journals (ASSAf 2018).

While “falling” for a predatory publisher is often blamed on the actions of individual academics (Maistry 2019), it can be argued that the structural and cultural contexts within which academics work make predatory publishing more or less likely (Le Grange 2019). Archer (1995; 1996) calls this “upwards conflation”, when problematic events, such as the rise of predatory publishers, are blamed on the actions of individuals without recognition of the role of structural and cultural conditions. Tomaselli (2018) and Muller (2017) both unpack the institutional nature of the dynamics that enhance the likelihood of predatory publishing and related problems.

**Table 2:** Predatory publishing by universities (2005–2014)

<b>University</b>	<b>Strong evidence of predatory publishing</b>	<b>Share of total papers</b>
Mangosuthu University of Technology	22	16.3%
Walter Sisulu University	76	16.0%
University of Venda	164	14.9%
University of Fort Hare	220	14.7%
Central University of Technology	71	13.4%
Durban University of Technology	86	10.5%
Cape Peninsula University of Technology	107	7.9%
University of Limpopo	151	7.7%
Vaal University of Technology	42	7.3%
University of South Africa	546	6.9%
North-West University	357	4.7%
Tshwane University of Technology	93	4.5%
University of Johannesburg	224	4.3%
University of Zululand	33	3.7%

University of the Free State	115	1.9%
University of KwaZulu-Natal	269	1.9%
Nelson Mandela Municipality University	41	1.8%
University of the Western Cape	50	1.3%
Stellenbosch University	126	0.9%
University of Pretoria	108	0.7%
University of the Witwatersrand	63	0.5%
Rhodes University	11	0.3%
University of Cape Town	40	0.3%

Source: Mouton and Valentine (2017, 7)

Not every university in South Africa has fallen for the scam of predatory publishing to the same extent, as can be seen in Table 2 above. In the period between 2005 and 2014, work by Mouton and Valentine (2017) shows that research-intensive universities had less than 1% of their publications in journals that showed strong evidence of being predatory, while in the same period, the HBUs and Universities of Technology had between 1% and 16% of their publications in such journals, which suggests that having a strong research culture is one mechanism that constrains this problem. Muller (2017, 62) argues that where institutions have weaker research cultures, rent-seeking behaviour can be particularly damaging because there are “limited controls—in terms of ethical norms or enforcement mechanisms—on the extent of harmful rent-seeking behaviours”. Defining a “strong research culture” is a challenge (Billot, Jones, and Banda 2013), but we argue that it is one in which the culture focuses on the use-value of research more strongly than its exchange-value.

### Use of Incentives Leads to Resentment

Muller (2017, 66) notes that “there is good reason to believe that the types of rent-seeking created by existing mechanisms divert resources from teaching”, and our data found that this was indeed perceived to be the case.

There are lots of attractive incentives behind research which started as a good thing anyway because it encourages the academics to do research, to have a love for research. But I think that is now coming at a cost. It’s costing teaching and learning because now every academic is more interested or more concerned about publishing, and then they know that if they publish ... there are going to be very good incentives. (AC 15)

Our study data suggested that the use of financial incentives to drive research productivity can lead to resentment because established academics who get paid the incentives are often not expected to participate in teaching and other responsibilities to the same degree. The financial benefits the university accrues from their research

productivity lead to structures being put in place to protect those who actively publish from other activities, so that they are doubly rewarded through both financial incentives and workload adjustments.

And that means you don't do any of the drudge work, you don't do any of the other things ... that we have to do. We've actually got two research Profs who don't do any teaching whatsoever. We're not quite sure what they do, they just get paid a heck of a lot more than we do. (AC 13)

Many junior staff noted their own difficulties in establishing a research profile alongside heavy teaching loads.

Many of us feel that our teaching load is too heavy to allow us to do research and for many people that is still the case. But I do think they are trying to improve the situation. (AC2)

It's just that sometimes it's difficult to actually do research while you teach and you have got so much load. But it is a core business of my profession. (AC 17)

A problem arises where novice researchers do not yet have access to research funds through incentives. (AC 10)

Some participants noted additional rewards beyond direct financial incentives accruing to those who published or graduated postgraduate students:

And there is such a strong emphasis on publication and postgrads. You know, for example, I had my first student graduate March this year, and I was invited to a dinner by the Dean and we went up to [nearby town] and they paid for the accommodation, and all the staff who had had Master's or PhD students who had graduated, were invited to this dinner. It was sort of a congratulation and celebration. (AC13)

Another issue related to incentives that emerged in the data as causing resentment was the relatively new requirement in some universities that postgraduate students publish from their research prior to graduation. The dissemination of knowledge created through taxpayer-subsidised master's and doctoral studies is undoubtedly important, and indeed the *Higher Education Qualifications Sub-Framework* (CHE 2013) states that a doctorate should merit peer-review publication, but there were concerns about requiring publications from postgraduates.

It's just a new ruling from Senate, is that before the student can graduate, they've got to submit a paper. One paper if they're Master's, two if they're PhD ... to journals, before they're allowed to graduate. (AC15)

Tomaselli (2018, 4) suggests that demanding publications from postgraduates is a case of universities "milking" the system. It would certainly seem that the policy

requirements for postgraduate publications are entirely based on exchange-value notions of outputs rather than use-value notions of knowledge dissemination.

The Scholarship is renewable for a second year subject to satisfactory progress, indicating that an accredited publication has been published or proof that it is in press or under review. The Scholarship is renewable for a third year subject to satisfactory progress, indicating that the article for the second year was published and that a second accredited publication has been published or proof that it is in press or under review. (University of Limpopo 2010 Research incentive policy)

The call for postgraduates to submit an article for publication prior to graduation can also be seen to contribute to the overburdening of the national academic publishing system. Tomaselli (2018) points out that the rapid increase in publications has placed enormous pressure on editors and peer-reviewers, and that both these tasks remain beyond the realm of metrics for promotion and payment of direct incentives.

Only individual academics who produce publications or complete postgraduate student supervision are eligible for personal incentives. We had thought that, in a South African context, incentives might work against collaborations, but there was no evidence in the data that the provision of individual incentives had decreased collaboration. And it is important to note that there has actually been an increase in collaborations, as evidenced in co-authorships both across the South African higher education system (DHET 2019a) and internationally (Bornmann and Mutz 2015). The increase in research co-authorships has especially taken place between the Global North and Global South (ASSAf 2018), although some literature suggests this may reflect problematic power imbalances already embedded in the academic publishing industry (Boshoff 2009; Harrison 2006). Boshoff's study (2009) looked at the nature of research collaboration between 82 authors from the UK, France, Cameroon and the US, and found that researchers from Cameroon were predominately involved in data collection and in the contextualisation of the study while their counterparts in the Global North were the lead researchers.

Though there was no evidence of a reduction in collaboration in this study, concerns were raised about the extent to which supervisors and others might "poach" work from their students to get increased outputs. There were also some concerns expressed in the data about the basis on which co-authorship was allocated:

You find that you are able to see your name in four or five publications, you wonder how much impact you've made, or your contribution, how much quality did you bring to that publication? (AC15)

The use of incentives as a structural driver of research output needs to be considered alongside its complementarity to the exchange-value discourse in the cultural domain, where the goal of research is seen as obtaining incentives and promotion (Muthama and McKenna 2017).



It [research] is supposed to be a core function or one of the major things that one should be able to do whether one might be able to or not. It is a major thing in the policy, if you are to be assessed to get promotion they consider your academic output. (AC 24)

It [doing research] is a must. The university gives you funding if you need. ... Once you are given the funding you are expected to give back in terms of publications. (AC 27)

Well, as I said, academics, you don't get promotion unless you have produced a certain number of papers. And in fact, we have a quota system for the number of papers that you have to produce each year. (AC 13)

The widely held belief that academic staff should do research and that the function of a university includes research (Graham 2013) was evident across our data, but there was very little consistency in the understanding of the purpose of research (Muthama and McKenna 2017).

## Conclusion

The state's use of funding as a structure to drive academic publications in the so-called "knowledge economy" has been matched in most universities with direct individual rewards to authors in the form of research funding or commission payments or both. All the academics who participated in this study were at universities that provide such incentives, and many indicated that they found the payment system beneficial to them. However, at least three concerns arose in our analysis of the data on the use of incentives: (1) they seemed to drive quantity with little consideration of quality; (2) universities were vulnerable to predatory publishers; and (3) there was resentment that those whose main work allocation was research and supervision were then paid additional incentives for doing this work.

We have argued that there needs to be more nuance in such a system and that institutions need to be wary about the extent to which a focus on payments reduces publications to their exchange-value. The use-value of publications as contributions to knowledge becomes of secondary importance or could even be seen as a constraint on output. We have argued that the effects of the structure of incentives are particularly problematic given the complementarity between this structure and a culture of instrumentalist conceptions of research and the commodification of knowledge. Having incentives that focus on one-sided indicators, that is publication rather than knowledge dissemination, "will ultimately lower the performance of the science sector in total" (Schmoch and Schubert 2009, 165), so the consequences of these processes go far beyond individual institutions. As Macleod (2010) states:

The incentive system is a blunt instrument that serves the purposes of increasing university income rather than supporting scholarship and knowledge production in South Africa. It is essentially a managerialist solution, in which bean counting trumps over concerns for scholarship.

This study's findings echo many of the concerns in the literature (for example, Muller 2017; Tomaselli 2018; Vaughan 2008) and add the empirical data of academics' perspectives on the unintended consequences of this phenomenon. We have argued that this requires a system-level change rather than blaming individual academics who make poor choices in their desire to achieve promotion and direct incentives, or chastising universities for developing policies and practices of direct reward that mimic that of the DHET. We need to revisit the metrics used to drive knowledge production and dissemination. At present, the funding formula rewards the supply of publications without any consideration of the demand for knowledge and thereby rewards "the pursuit of mediocrity" (Vaughan 2008, 91). Looking back at our social realist underpinnings urges us to question the perverse effects of structures, such as direct incentives, that are put in place without careful thought as to the desired culture. Vaughan (2008, 96) asks a key question:

What sort of behaviour do we wish to encourage in South Africa? Should we be rewarding universities whose academics produce the greatest number of publications, without regard to quality, or should our emphasis be on a system that inspires our academics to aim for a level of scholarship which can withstand the scrutiny of an international audience?

We would hope for the latter. If we want universities to be spaces of critical knowledge production and dissemination, and if we want academics who are committed to the pursuance of that knowledge, then we need to be very careful about the structures we put in place to drive this.

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