
Funding transformative research: ESRC's challenge to conservatism in peer review

'Effective Operation of Competitive Funding Systems'

OECD Global Science Forum

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The trouble with transformative research and peer review

- ‘TR’ goes back to Kuhn’s (1970) *Revolutionary Science*: the establishment defends existing paradigms against new ones.
- This idea has been linked to peer review, including for research funding (Wessely 1998; Horrobin 1996; Roy 1985; Lakatos & Musgrave 1970, Luukkonen et al 2015)
- TR projects have also been associated with greater risk – additionally problematic in peer review; attempts to fund TR have had varied success (Chubin and Hackett 1990, Wagner and Alexander 2013, Arnold et al. 2013, Häyrynen 2007, Luukkonen 2012)
- Longer lead times (Laudel and Gläser 2014)
- Occasionally (esp in social sciences): associated with disadvantaged groups (age, gender, ethnicity, location, etc)

Critical questions

- Every research project should contribute something novel. So where does ‘new’ end and ‘transformative’ begin? (i.e. what is TR?)
- Accepting a level of risk when funding potentially transformative projects is likely important; but how much risk is too much? (Public funds!)
- Are new topics w/ unusual disciplinary or interdisciplinary perspectives still within the remit of the funder?
- Scholarly quality / relevance / impact vs. transformative scope and character
- ‘Transformative’ may mean that there are no experts suited to reviewing (yet)
- Peer review: inherently conservative?

The ESRC's Transformative Research Scheme

- Open to any field of social science
- £200-250k over 18 months
- Stage 1: anonymous 2-page applications
- Stage 2: 'pitch-to-peers' presentation in person to reviewers and fellow applicants

	2012/13 call	2013/14 call	2014/15 call	Scheme totals
Total applications (reviewed anonymously at the sift panel)	67	69	106	242
Shortlisted for Pitch-to-peers workshop	32	26	25	83
Funded	20	13	12	45

Examples of projects funded

- Neuroscience/ social science crossover: (6 projects funded around this area)
 - *A new sociology for a new century: transforming the relations between sociology and neuroscience, through a study of mental life and the city*
 - *Negotiating neoliberalism: changing behaviours, values and beliefs*
 - *Using "naturalistic dual-EEG" to measure mother-infant brain-to-brain (b2b) synchrony in socially-mediated learning*
- Big data: (4 projects funded around this theme)
 - *Using big data analytics and genetic algorithms to predict street crime and optimise crime reduction measures*
 - *Picturing the social: transforming our understanding of images in social media and Big Data research*

Examples cont'd

- Other examples:
 - *Beyond the 'banality of evil': a new understanding of conformity and atrocity [Revisiting the Milgram experiments through virtual reality simulations]*
 - *Randomly selected "politicians": Transforming democracy in the post-conflict context [Comparing direct political dialogue and imagined conversations with the 'other' as means to achieve political compromise]*
 - *Hi-tech observation of playground social communication trajectories in children (HOPSCoTCh) [Using GPS technology to track children's' playground movements and interactions]*
 - *Health of Populations and Ecosystems (HOPE) [combining data on public health and environmental health to inform policy]*

Our evaluation

- Literature review on TR in theory and practice
- Survey of TR scheme applicants
- Interviews w/ grant holders, panelists, & ESRC staff
- Observation at 2014/15 sift panel and Pitch-to-peers event

- Two peer review exercises (using a panel of 7 former RAE/REF panelists from across the social sciences)
 - *1: Applications review (successful, shortlisted to P2P, rejected; n=93)*
 - *2: Outputs (Articles and working papers – TR vs. Standard grants; n=80)*
 - *Reviewers were not told which is which*

The review templates

17 (Ex. 1) and 15 (Ex. 2) criteria pertaining to TR	5-point Likert scale (Strongly agree to strongly disagree , plus 'cannot say')				
This output presents a pioneering theoretical or methodological innovation					
This output is based on the engagement of unusual interdisciplinary perspectives					
This research for this output likely involved an unusually high degree of risk in terms of likelihood to achieve successful research results					
This output is likely to challenge widespread assumptions of typical social scientific enquiry					
This output could lead to a paradigm shift in its field					
This output is likely to require comparatively long lead times to achieve successful results					
This output may struggle to gain widespread acceptance in the academic community					
...					

Review templates cont'd

Overall, would you describe this project/ output as 'transformative'?		Indicate confidence in your judgement	
Yes		Very confident	
No		Fairly confident	
Can't say		Less confident	
		Not confident	

Outputs review only

Quality profile	None/ very low	Low	Moderate	High	Very high	Cannot judge
Originality						
Significance						
Rigour						
Scope to transform social science						
Scope to transform wider society						

Outputs review only

Review of applications: an expert-led definition

- “Overall, would you describe this project as ‘transformative’?”
[Y/N/U] is predicted by scores on six criteria:
 - *This research presents a pioneering theoretical or methodological innovation*
 - *This research is based on the engagement of unusual disciplinary and interdisciplinary perspectives*
 - *This research can be described as high-risk, but with the possibility of high reward*
 - *This research could lead to a paradigm shift in its field*
 - *This research is likely to involve an unusually high degree of risk in terms of the safety and wellbeing of the researcher and/ or participants (Negative)*
 - *This research is likely to require comparatively high amounts of funding to achieve successful results*

The expert-led definition predicts the ESRC TR scheme's funding decisions

	Overall scheme outcomes Indicator 1: The project has been accepted, and zero otherwise	Sift panel outcomes Indicator 2: The project has been accepted or shortlisted, and zero otherwise	Pitch-to-peers outcomes Indicator 3: The project has been accepted, zero if it was shortlisted
Reviewers' score (Composite indicator)	0.381*	0.260*	0.344*
	(0.114)	(0.117)	(0.135)
Number of observations	173	173	127 (excludes <u>rejected</u> projects)

Standard errors in parentheses. The (*) in each cell means that the composite indicator is statistically significant at 95% confidence level.

Review of outputs: little difference on the overall question...

Overall, would you describe this output as 'transformative'?	TR		Standard	
	Count	%	Count	%
Yes	28	60%	37	54%
No	15	32%	24	35%
Can't say	4	9%	7	10%
Total reviews	47	100%	68	100%

...but large differences on several criteria:

- “This output presents a pioneering theoretical or methodological innovation”
- “This output represents a novel application of theory or methods to a new context”
- “This output is based on the engagement of unusual interdisciplinary perspectives”
- “This output is likely to challenge widespread assumptions of typical social scientific enquiry”
- “This output could lead to a paradigm shift in its field”
- “The research behind this output is likely to require comparatively high amounts of follow-up funding to achieve genuinely salient results”

Top two ratings ('Agree' or 'Strongly agree')

	Pioneering theoretical or methodological innovation	Novel application of theory or methods to a new context	Unusual interdisciplinary perspectives	Likely to challenge widespread assumptions of typical soc. sci. enquiry	Could lead to a paradigm shift in its field	Likely to require comparatively high amounts of follow-up funding
TR outputs scoring 'Agree' or 'Strongly agree' (total reviews: 47)	61.7%	68.1%	<u>51.1%</u>	<u>61.7%</u>	<u>55.3%</u>	<u>36.2%</u>
Standard outputs scoring 'Agree' or 'Strongly agree' (total reviews: 68)	64.7%	72.1%	<u>29.4%</u>	<u>45.6%</u>	<u>41.2%</u>	<u>19.1%</u>

Top rating ('Strongly agree' only)

	Pioneering theoretical or methodological innovation	Novel application of theory or methods to a new context	Unusual interdisciplinary perspectives	Likely to challenge widespread assumptions of typical soc. sci. enquiry	Could lead to a paradigm shift in its field	Likely to require comparatively high amounts of follow-up funding
TR outputs scoring 'Strongly agree' (total reviews: 47)	29.8%	29.8%	19.1%	17.0%	17.0%	12.8%
Standard outputs scoring 'Strongly agree' (total reviews: 68)	13.2%	17.6%	5.9%	4.4%	11.8%	2.9%

Quality profile: only minor differences

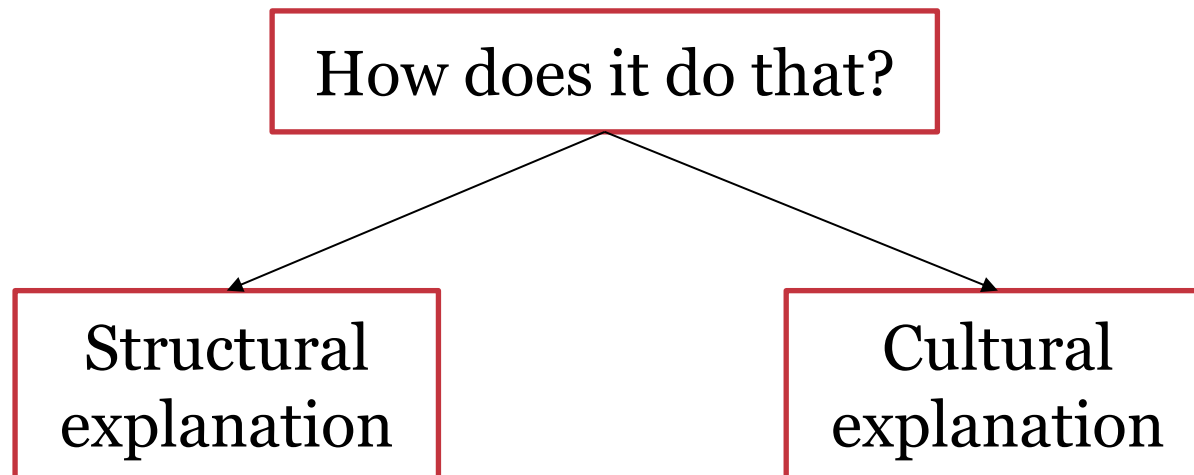
	Originality	Signifi- cance	Rigour	TR SCOPE - Social Science	TR SCOPE - Society
% of reviews of TR outputs scoring 'High' or 'Very high' (total reviews: 47)	53.2%	66.0%	63.8%	40.4%	38.3%
% of reviews of Standard outputs scoring 'High' or 'Very high' (total reviews: 68)	48.5%	63.2%	67.6%	35.3%	44.1%
Difference	4.7%	2.7%	-3.8%	5.1%	-5.8%
% of reviews of TR outputs scoring 'Very high' (total reviews: 47)	17.0%	23.4%	27.7%	14.9%	6.4%
% of reviews of Standard outputs scoring 'Very high' (total reviews: 68)	10.3%	23.5%	13.2%	5.9%	8.8%
Difference	6.7%	-0.1%	14.4%	9.0%	-2.4%

Markers of TR and quality correlate substantially

	Originality	Signifi- cance	Rigour	Scope to transform society
This output presents a pioneering theoretical or methodological innovation	<u>0.7117*</u>	<u>0.6145*</u>	0.3769*	0.4626*
This output represents a novel application of theory or methods to a new context	<u>0.6819*</u>	0.5907*	0.3470*	0.4787*
This output is based on the engagement of unusual interdisciplinary perspectives	0.4819*	0.5091*	0.2023*	0.4456*
This research behind this output may generally be described as 'high-risk, high reward'	0.3717*	0.3436*	0.1849*	0.3048*
This output is likely to challenge widespread assumptions of typical social scientific enquiry	0.5784*	0.4575*	0.152	0.3254*
This output could lead to a paradigm shift in its field	<u>0.6448*</u>	<u>0.6417*</u>	0.2486*	0.4920*
This output is likely to produce a broad base of knowledge, new thinking or insights	<u>0.6951*</u>	<u>0.7774*</u>	0.4385*	<u>0.6078*</u>

Beyond the review exercises

Our review evidence suggests that the ESRC's scheme successfully identifies and funds transformative research, and that funded projects produce outputs that are comparable in quality, but more transformative by a range of criteria, than standard grant counterparts



The logic of the assessment stages

	2-page anonymous application	Pitch-to-peers
Emphasis	<ul style="list-style-type: none">- Transformative scope- Relevance to ESRC	<ul style="list-style-type: none">- Quality/ scholarly details- Risk (incl. project success and ethical dimensions)
Strengths	<ul style="list-style-type: none">- Anonymity & brevity: Emphasis is on the idea; other factors do not feature- Panel-review: large pool of expertise	<ul style="list-style-type: none">- Format: Possibility for questions left open at stage 1 (around projects & applicants)- Input from fellow applicants: additional expertise

Initial problems

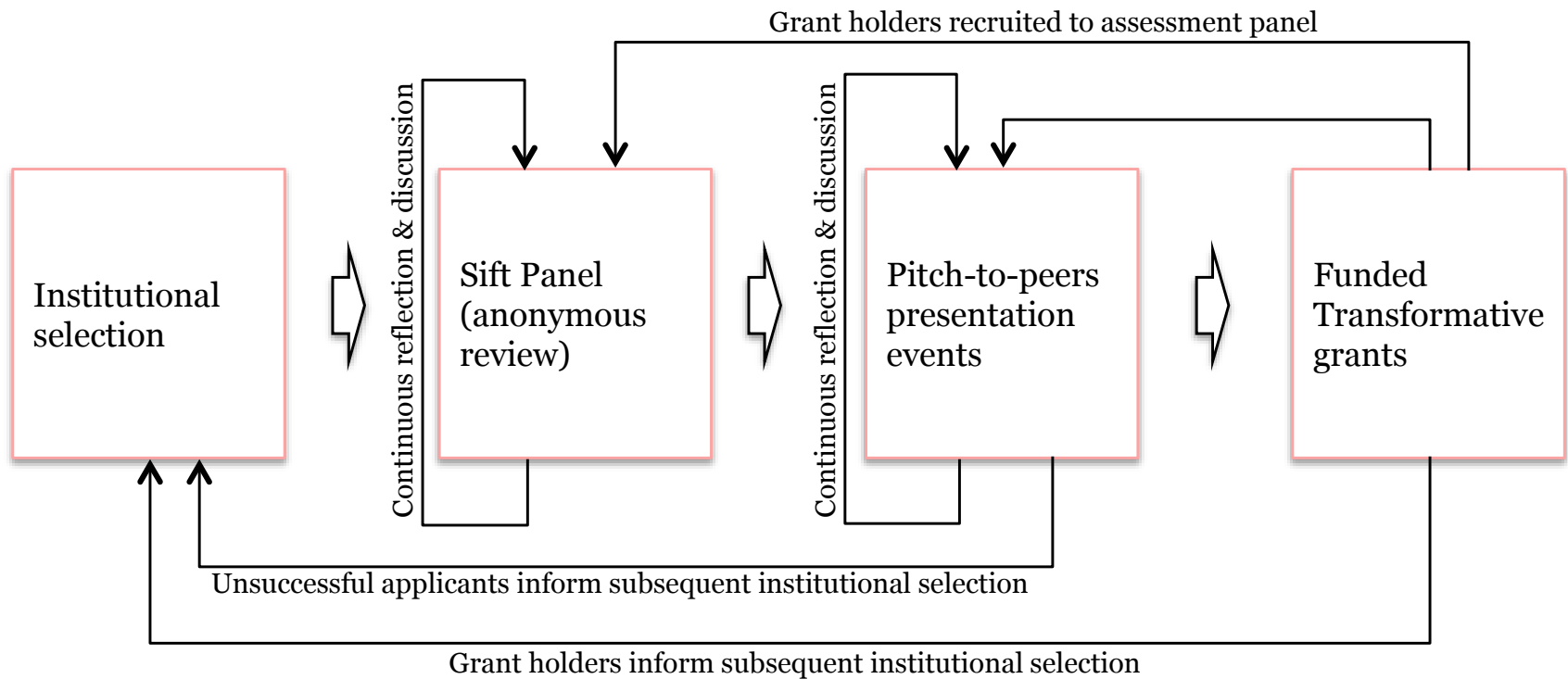
- Issues encountered in the first call (2012-13) of the scheme:
 - *Lower participant satisfaction with P2P event (survey)*
 - *Reports of an intimidating, bullish atmosphere (interviews)*
 - *Largely male, senior grant winners, despite relatively even pool of applicants (problem at both application stages) (ESRC data)*
 - *Lack of correlation between panelists' and fellow applicants' scores of proposals (ESRC data)*
 - *Overall, fellow applications judge significantly more harshly*
 - *Applicants presenting later in the day were less successful.*
- All these problems disappear by round 3 (2014-15)

A growing, self-reflective culture of TR?

*“As soon as we unpack something, we begin to talk it down”
(Anonymous, Panellist reflecting to others at the sift panel)*

- Strong degree of self-reflection at panel meetings
- Recruitment of former grant winners to the assessment panel (sharing of experience)
- Active role of panel chair
 - *Encouraging collegial atmosphere*
 - *Efforts to alleviate sense of direct competition*
 - *Encouraging discussion and ‘giving proposals a chance’*
- Very few formal rule changes; these ‘cultural’ explanations likely explain the much optimised process data over time.

Learning and feedback loops in and around the scheme



Conclusions

- Overcoming the conservatism of peer review and funding transformative research is possible
- The notion of TR has multiple different meanings in contemporary social science; some of these relate to the Kuhnian notion of challenge to a ‘mainstream’ and paradigm shifts
- Balancing transformative scope, scholarly quality, risk, etc needs to be done deliberatively and collaboratively for each application (few blanket rules or definitions)
- The structure used by ESRC is successful in achieving these ends
- However, fostering a deliberative and self-reflective culture of TR appears to be critical as well
- Open question 1: Are established markers of professional scholarly quality and practice a condition for, or constituent of TR?
- Open question 2: might there be research proposals so radical that even a scheme like this would not fund it?

References

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- Full evaluation report available:
 - www.esrc.ac.uk => *Research* => *Evaluation and impact*
 - <http://www.esrc.ac.uk/files/research/evaluation-and-impact/esrc-transformative-research-scheme-evaluation/>