

Evaluation in Portuguese Universities

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LAETA, Associate Laboratory of Energy, Transportation and Aerospace



INEGI, Institute for Science and Innovation in Mechanical and Industrial Engineering

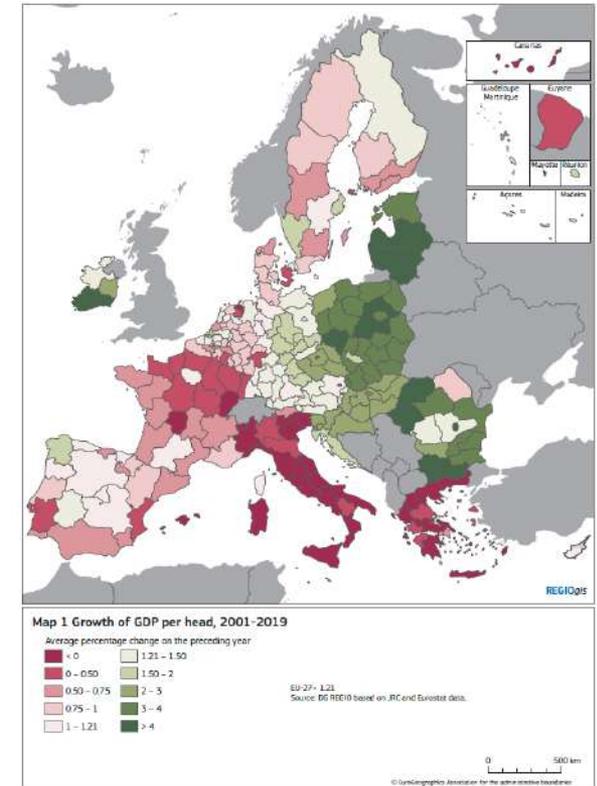
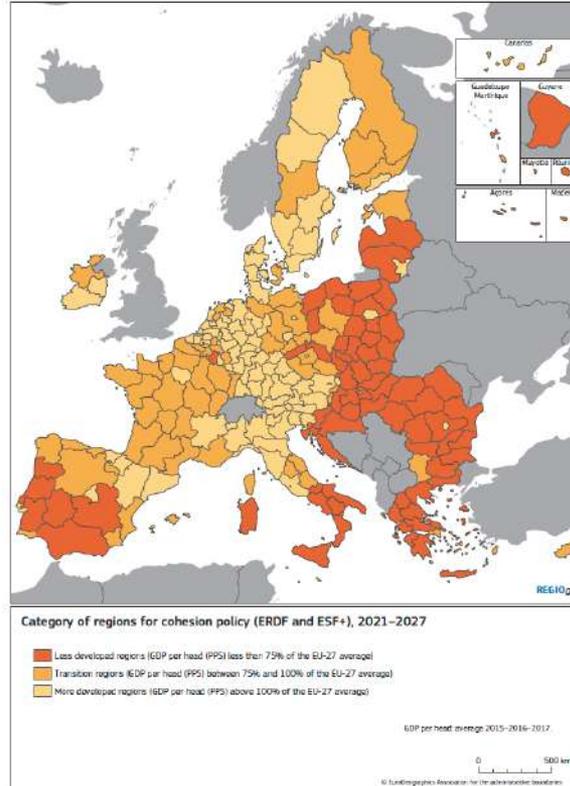
https://sigarra.up.pt/feup/pt/func_geral.formview?p_codigo=240020

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Cohesion in Europe towards 2050

Eighth report on economic, social and territorial cohesion



https://ec.europa.eu/regional_policy/en/information/cohesion-report/

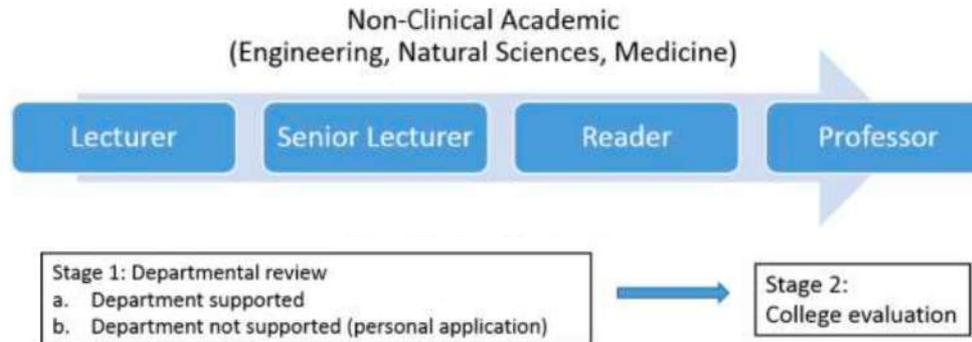
Urgent need to attract and retain talent.



<https://www.thenewatlantis.com/publications/the-university-the-king-built>

Challenges – hiring and promotion

1. Impossibility of distinguish between hiring and promoting faculty.
2. Lack of a predictable career path for faculty and researchers.



Education; research; leadership and management; profession and practice.

Activities, measures of recognition, progression requirements.

3. Lack of accountability and very few checks and balances.

Challenges – hiring and promotion

4. Archaic method of hiring and promoting, based on public notices, which promotes inbreeding.

PROFESSORES

No ensino superior não é o mérito que comanda as contratações

Estudo da Direcção-Geral de Estatísticas da Educação e Ciência vem confirmar a existência de endogamia académica nas universidades portuguesas. “Nos concursos institucionais para posições académicas, os candidatos internos à instituição prevalecem sistematicamente”, conclui.

Público, 21/9/2017

Hypothesis: the degree of scientific maturity of a given institution is inversely proportional to the degree of quantification used in the promotion/hiring processes.

QS World University Rankings 2022 #>550

QS World University Rankings 2022 #1-5

Critério	Parâmetro	Peso%
Desempenho científico	Produção científica, cultural ou tecnológica;	65
	Reconhecimento pela comunidade e sociedade em geral;	5
	Coordenação e participação em projetos científicos, de criação cultural ou de desenvolvimento tecnológico;	20
	Coordenação, liderança e dinamização da atividade de investigação	10
Capacidade pedagógica	Atividades letivas em instituições de ensino superior;	35
	Desempenho pedagógico;	15
	Inovação e valorização pedagógicas;	5
	Produção de material pedagógico; coordenação e participação em projetos pedagógicos;	10
	Acompanhamento e orientação de estudantes de licenciatura, de mestrado e de doutoramento.	15
	Projeto Pedagógico [referido em 2.2 c)]	20
Outras atividades relevantes	Prestação de serviços à comunidade científica e educacional, bem como ao tecido económico-productivo e à sociedade em geral;	20
	Ações e publicações de divulgação científica, cultural ou tecnológica;	25
	Valorização e transferência de conhecimento;	25
	Atividades de avaliação de natureza académica, designadamente no âmbito de provas e concursos;	20
	Participação em atividades de gestão em instituições de ensino superior ou de investigação ou em outras entidades de carácter científico, tecnológico ou cultural que desenvolvam atividades relevantes no âmbito da missão das anteriores.	10

Criteria for the conferment of the title of professor are as follows:

Research: A research record of a high order, the quality of which is comparable in distinction with that expected of professors appointed on the grounds of research achievement at other major research universities.

Teaching: A record of effective teaching (either undergraduate or graduate teaching, or both) for the University and for colleges concomitant with the duties of the university post and the college fellowship (where one is held).

Good citizenship: A record of involvement in University and/or college administration and demonstrable competence in such administration. This may include activities connected to enterprise, links with industry and business etc. in appropriate cases.

With regard to the research criterion, **it would be of considerable help if you would comment on the quality and international reputation of** research record giving your candid opinion, and compare its distinction with that expected of professors in the leading departments in this subject area. Any additional comments you might have, e.g. on his contribution to teaching and good citizenship, would of course also be welcome.

- Excessive quantification (often of the wrong parameters) with little consideration of quality.

Challenges – hiring and promotion

- Insufficient control of potential conflict of interests.
- Requirement of certification of the PhD degree by Portuguese Universities at the application stage.
- Requirement of habilitation for the position of Full Professor.
- Candidates are not interviewed.

Challenges – annual personal evaluation

1. Excessively quantitative (e.g. number of papers, number of co-authors, number of projects, number of courses, number of students, etc.) with insufficient consideration for quality of the activity (impact factor of a journal must not be a surrogate for the scientific relevance of a paper).

A Rational Analytic Theory of Fatigue

PAUL C. PARIS
Assistant Professor of Civil Engineering

MARCO P. GOMEZ and WILLIAM E. ANDERSON
Research Engineers, Boeing Airplane Company



A great deal of effort has recently centered around examination of the factors influencing the growth of fatigue cracks. Fatigue has been considered a multi-phase problem: e.g., initiation of a crack and its growth are often considered as separate phenomena. In contrast, the objective of this work is to show that the growth of an initial "crack-like" imperfection to a critical size, which causes static failure of a structure, may be described by a single rational theory. Two loading parameters, the nature of the stress field near the tip of a crack and the variation of this field, are taken to control the rate of crack extension in a given material. This hypothesis is given by using it to correlate data from three independent investigators. Since it shows a positive correlation of all available data for crack-extension rates from 10^{-4} to 10^2 in. per cycle, the hypothesis may be used to formulate a theory of fatigue that permits computing the structural lives of complicated geometries from simple laboratory tests of material properties.

The Stress Distribution Near the Tip of a Crack

The form of the stress distribution in the vicinity of a crack root was given by Goodenough in 1946 and has recently been expanded by Irwin³ and Williams.⁴ The unique character of this form, as Irwin showed,⁵ is a controlling factor in attempts to analyze crack extension under static loads. We will show that this same character becomes fundamental in crack extension under cyclic loading upon the addition of new concepts to describe the cyclic nature of the loading.

Mr. Gomez received his M. S. degree in Mechanical Engineering in 1958 at the University, after which he worked for Boeing. He is now Senior Engineer at the Black Systems Division of Lockheed Aircraft Corporation.

JANUARY, 1961
The Trend in Engineering 13, 9-14 (1961)

Paul & Paris 2/11/2010

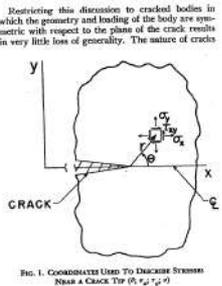


FIG. 1. COORDINATES USED TO DESCRIBE STRESSES NEAR A CRACK TIP (ρ , θ , ϕ)

is to form most often on such planes, i.e., planes perpendicular to maximum-principle tension stresses. Williams⁴ and Irwin⁵ have given the required forms of stresses for other cases, but these will not be discussed further in this work.

The coordinates of points in a cracked body with



2. The process can be conducted without any interviews, definition of objectives and follow-up.

Challenges – annual personal evaluation

3. Same criteria for different stages in the academic career.
4. High percentage of top marks, a fact that puts at stake the credibility of the evaluation process.

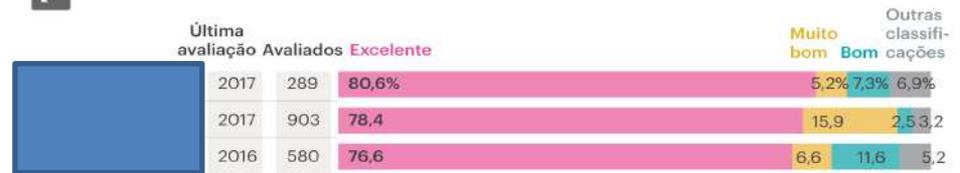
ENSINO SUPERIOR

Mais de metade dos professores do superior com avaliação de “excelente”

Menos de 5% tem resultado negativo. Sistema de apreciação do desempenho não agrada nem às instituições nem ao sindicato do sector.

Público, 2/6/2019

Que notas recebem os professores do ensino superior



Where are the corresponding ERC grants, international scientific prizes, memberships of editorial boards of scientific journals, etc.?

5. Effort of little or no consequence.

Suggestions

Level 1 – Urgent actions that can be implemented in the short term.

- Invite top independent international scientists to the evaluation committees.
- Ensure coherence between admission requirements and composition of the evaluation committee.
- The use of external reviewers should be mandatory. The candidate should submit up to 5 papers for review, with a clear description of his/her contribution to the paper and a summary of its importance and originality.
- Avoid possible conflict of interests (co-authorships in the recent years, advisor, etc.).
- Mandatory interview, lecture and research seminar.
- Minimize bureaucratic burden of the candidates and promote international applications.

Suggestions

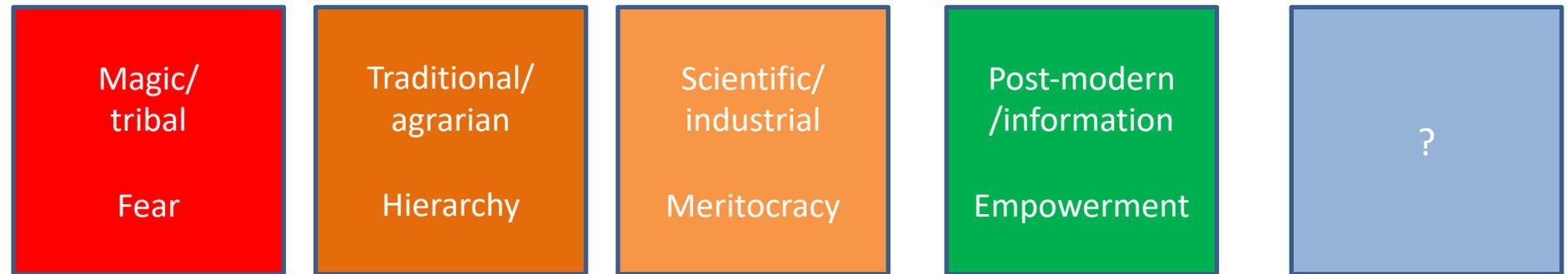
Level 2 – Urgent reforms that require a strong political commitment (long term).

- Higher autonomy of the Universities in the hiring and promotion processes.
- Establish a timetable for promotions, based on merit not on opening of a few positions.
- Design a system that avoids nepotism and that rewards documented excellence:
 - Department committee or individual application, extensive use of external (national and international) independent referees. Applications fully discussed at the School committee (which includes the Dean), final disposition by the Rector.
- Replace the current method of annual personal evaluation by a personal review and development plan that includes a meeting with the Head of Department, identification of objectives, difficulties and corrective actions subjected to timelines if required.
- The annual review must have consequences (e.g. salary, awards).

Suggestions

Level 3 – Wishful thinking?

3/4 of the employees are disengaged from their work and organizations. Tired of politics, silos, bureaucracy, competition, lack of purpose...



Time →

Thank you for your attention!