

PHYS 395 Research Methods - Lecture 3

Science ethics, fraud, retraction of papers, the Schön scandal, predatory publishing

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Ethical research

Scientific ethics calls for honesty and integrity in all stages of scientific practice, from reporting results regardless to properly attributing collaborators. This system of ethics guides the practice of science, from data collection to publication and beyond.

Violation of ethical standards (science misconduct) may take different forms. One of them is plagiarism (previous lecture). Another major violation is science fraud.

Science fraud

Science fraud (a form of scientific misconduct) is the violation of the standard codes of scholarly conduct and ethical behavior in the publication of professional scientific research.

- Fabrication of data
- Falsification of data
- Improper manipulation of data

Retraction of papers

A retraction is a motion of an academic journal, which consists of a statement that a peer-reviewed article previously published in the journal should be considered invalid as a source of knowledge, and subsequent removal of the paper from online access.

- This phenomenon aims to fight fraud and maintain reputation of publishers
- Has become fairly common in the last decade in some prominent journals
- Retraction can also occur due to an unintentional error in the published work or due to public outrage

Web blogs and activism

A number of visible science fraud blogs have appeared on the internet in the past decade making huge waves and causing controversies. Examples are:

- science-fraud.com

This blog was run by Paul Brookes (University of Rochester Medical Center). The legal obstacles made the author stop his activity and close the blog. An [interview](#) with him can be found in the Science magazine.

- retractionwatch.com

Run by Ivan Oransky and Adam Marcus (Center for Scientific Integrity). This is probably one of the most popular blogs related to science fraud

Post-publication peer-review

There are resources such as [PubPeer.com](https://pubpeer.com) where viewers can discuss and review research *after* it was published in a major journal. It has served as a whistleblowing platform highlighting shortcomings in several high-profile papers, in some cases leading to retractions and to accusations of scientific fraud.

The Schön scandal

Jan Hendrik Schön of Bell Labs is a prominent example of science fraud in physics. He was working on crystalline organic semiconducting materials and seemed to have achieved great success before **being accused of fraud**.

- Research was published in major journals, including Science and Nature
- Was a recipient of a number of prestigious awards and Prizes
- No research group anywhere in the world succeeded in reproducing his spectacular results
- The incident was called the “biggest fraud in physics in the last 50 years”
- Schön admitted misconduct and lost his position
- Doctoral degree had been revoked by the University of Konstanz (Germany)

The case of Yoshitaka Fujii

Anesthesiologist, career at Tokyo Medical and Dental University, the University of Tsukuba, and Toho University. Was dismissed from his position as associate professor of anesthesiology after investigations into allegations of scientific misconduct.

- Current record on the number of papers retracted by a single researcher - 183
- Most research results fabricated (only three of 212 published papers by Fujii contained clearly reliable data according to investigation)
- If something seems too good to be true, it probably is

More details on this story can be found in the [Nautilus](#) magazine

The Bogdanov affair

This represent a different [case](#), in which Igor and Grichka Bogdanov (Bogdanoff) were accused of a hoax.

- Started with a book called *Dieu et la Science (God and Science)* which prompted criticism and made the brothers to pursue PhD in physics at the University of Burgundy
- “The abstracts are delightfully meaningless combinations of buzzwords... which apparently have been taken seriously” according to physicist Max Niedermaier (University of Tours)
- The case was compared to the “[Sokal affair](#)”

Predatory journals

Predatory publishing (aka deceptive publishing) is an exploitative academic publishing business model that involves charging publication fees to authors without checking articles for quality and legitimacy and without providing the other editorial and publishing services that legitimate academic journals provide, whether open access or not

- Beall's list (now closed) is a prominent list of (mostly) predatory journals that was maintained by the University of Colorado librarian Jeffrey Beall
- “Dr Fraud” experiment (see [publication](#) in Nature)

Publishing in predatory journals by KZ researchers

According to Kapital.kz, Kazakhstan is a world leader in terms of publishing in predatory journals

КАЗАХСТАНСКИЕ УНИВЕРСИТЕТЫ

индексирование в Базе SCOPUS
наибольшее число статей и обзоров
в ИСКЛЮЧИТЕЛЬНЫХ ЖУРНАЛАХ
ГОДА ПУБЛИКАЦИЙ 2013-2017

	Общее количество статей и обзоров	Количество статей и обзоров в журналах, исключенных из Базы Scopus	Доля статей и обзоров в журналах, исключенных из Базы Scopus
Kazakhstan	10427	3295	32%
Pavlodar State Pedagogical University	151	135	89%
KAZDUU University	65	54	83%
Narxoz University	72	57	79%
University of International Business	29	22	76%
Kazakh State Women's Teacher Training	48	34	71%
Karaganda Vobshchak University	24	16	67%
Academy of Public Administration	52	34	65%
University of International Relations and World Languages	55	34	62%
Abay Kazakh National Pedagogical	388	239	62%
MKN Duleyt Nazir State University	90	54	60%
N. Zhubayev Aktober Regional State University	46	27	59%

Karkyt Ala-Kyzylorda State University	16	9	56%
Almaty Technological University	51	28	55%
Khorgosyng North-Kazakhstan State University	45	23	51%
Abnakh Yessei University	317	158	50%
Suleyman Demirel University, Almaty	41	20	49%
Karaganda Economic University of Karapindikbeuz	108	52	48%
S. Toraygynov Pavlodar State University	173	81	47%
Eurasian Technological University	15	7	47%
Turan University	52	24	46%
Shalaimin State University of Semey	14	6	43%
Sh. Ualikhanov Kokshetau State	39	16	41%
Almaty Management University (AlmaU)	32	13	41%
Kazakh National Technical University	263	111	39%
Salain Serfulin Kazakh Agrotechnical University	178	69	39%
Buketov Karaganda State University	241	84	35%
Kazakh National Medical University	184	58	32%
L.N. Gumilyov Eurasian National	1140	339	30%

Semey State Medical University	31	9	29%
Al-Farabi Kazakh National University	1456	411	28%
Kazakh National Agrarian University	43	11	26%
South Kazakhstan State University (SKSU)	388	98	25%
West Kazakhstan Murat Ospanov State Medical University	68	17	25%
Qobayshayev East Kazakhstan State Technical University	172	43	25%
Kazakh-British Technical University (KBTU)	166	39	23%
Karaganda State Medical Academy	139	32	23%
Almaty Institute of Power Engineering and Telecommunication	70	15	21%
International Information Technology	19	4	21%
Karaganda State Technical University	171	32	19%
KMEP University	83	13	16%
Rudnyy Industrial Institute	28	1	3.6%
Nezherbayev University	979	13	1.3%
University of Central Asia	1	0	0.0%

ДАНИЕ СЪБРАНИ АВТОМАТИЧЕСКИ ИЗ БАЗЫ SCOPUS И МОГУТ СОДЕРЖАТЬ НЕТОЧНОСТИ