

MS. SCIENTIST

Brandy Y Productions Inc.

A Canadian Story

[TRAILER](#)

Maria Luisa Chiofalo, Dep. of Physics «Enrico Fermi» and INFN, Pisa, Italy
Tiziana Metitieri, PsyD PhD

#WeToolnScience, Associazione Nazionale Donne e Scienza
Pisa, September 20-21 2018

Academies are progressively developing, though at slow rate, awareness on the many routes along which gender differences in fact turn into discriminations, thus transforming a powerful engine for scientific and social community development into a self-snagging equally powerful hamper. In fact, a gender diversity approach would recognize and exploit the different manners in which female and male scientists act their creativity, competences, communication, and leadership, thereby resulting into a most skillfull, fostering, and fertile environment.

For this reason, an increasing level of committment and planning is taking place, aimed to practice in scientific careers mainstreaming and empowerment of gender diversities in academic organizations.

In this talk, we elaborate on these concepts, inspired by the more recent Canadian Documentary "Ms. Scientist" by Brandy Yanchyk, profiling Canadian women in science along with their challenges, and how Canada is seeking for positive changes.

POCHE DONNE
NELLA SCIENZA
ECCO DOVE AGIRE

MARIA LUISA CHIOFALO

(segue dalla prima di cronaca)

A PARTIRE dal funzionamento del cervello marinato negli ormoni, studi di neuroscienze (Brizendine, *Il cervello delle donne*), supportano un approccio cognitivo delle donne che userebbe più intelligenze allo stesso tempo, legato alla pratica di cura di persone e cose, al metterle in relazione con forme di mediazione.

Queste differenze diventano insidiosi in singole donne consapevoli, generano rivoluzioni in una loro massa critica. Vi corrispondono stili differenti - non migliori o peggiori - di apprendimento, creatività, leadership. Come la persona che cura le tante differenze, che ha la forza di guardare ad evolvere con successo le proprie capacità e felice, così è la comunità che dà valore alle differenze: l'uguaglianza è di diritti e l'identità è composizione unica di diversità. Le generalizzazioni inchiodano identità e differenze. Le generalizzazioni sono le grandi gabbie, ostacolano l'evoluzione in forme di integrazione orizzontale per tema o verticale per potere: le operazioni inverse sono mettere al centro dell'intervento la differenza di genere (mainstreaming) e rafforzare consa-


D'altra parte, il nostro sistema scolastico cura ben poco la formalizzazione dei problemi nella prima infanzia e poco la usa nello studio delle scienze, a spiegare il divario complessivo rispetto alla media Ocse. Con la famiglia in emergenza educativa, il nostro sistema funziona per processi poco centrati sulle idee, standardizzati su poche intelli-

genze, inefficienti per personalizzare l'intervento sulle differenze, a spiegare i divari di segno opposto in diverse discipline. La qualità della relazione educativa, ingrediente del successo formativo, si deteriora dall'infanzia all'università, mentre la formazione integrata per competenze cede a quella differenziata per discipline e l'insuccesso aumenta da un ordine di scuola al successivo.

ni, in una segregazione rafforzata dal fatto che il sistema formativo e di governance è in mano alle donne: una segregazione, per uomini, che ostacola l'evoluzione di un sistema che sarebbe opportuno ripensare. Dopo la Scuola, la rigidità dell'Accademia: ancora troppo gerarchica, con giovani a lungo precari dell'autonomia scientifica e critici di valenze diverse. Segue poi un tipo di università maschile, che in alcuni casi non è altro che un concetto di un celebre volume dell'AdA: la massima produttività scientifica è richiesta nei 30 anni, quando anche la capacità riproduttiva è al massimo. Ne segue una segregazione anche verticale, con rare donne leader nella ricerca come modelli di succes-

so per giovani. In questo quadro, personalizzare l'intervento educativo sulle differenze e offrire modelli di ruolo funzionano da mainstreaming ed empowerment: amplificare la differenza di genere nella relazione educativa può fare la differenza per cambiare il segno dei dati Ocse.

L'autrice è docente di Fisica all'Università di Pisa e assessora del Comune di Pisa

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DIVULGARE LA SCIENZA UNA RIVOLUZIONE ANCORA POSSIBILE

EINSTEIN e Infeld paragonano la ricerca scientifica ad un giallo in cui l'assassino è la natura e chi fa scienza è il/la detective che attraverso indizi, intuizioni, prove e riprove giunge alla soluzione del mistero. È questo il fondamento del metodo scientifico con il quale Galileo ha rivoluzionato la Conoscenza duemila anni dopo Aristotele: per questo la scienza è importante nelle nostre vite ed è importante che sia alla portata di tutti. Potevamo trasferire la rivoluzione al nostro sistema educativo, discutere le dieci idee essenziali della scienza sin dall'infanzia insieme a pennarelli e cori natalizi, inserire la divulgazione tra i criteri obbligatori di valutazione di qualità dell'Università e d'uso di finanziamenti. Lo abbiamo invece centrifugato, separando cultura scientifica e umanistica: poiché si nasce Aristotele, rimaniamo nell'infanzia dell'umanità fino almeno all'adolescenza, per poi demolire gli errori concettuali e ricostruire da zero. Ma perché il metodo scientifico è importante? Chi lo pratica, acquisisce competenze di vita, prima scardinando stereotipi che, rigidi, funzionano da potentissimo ostacolo all'evoluzione. Nella sequenza indizi-ipotesi-verifica, usa deduzione, induzione e abduzione con il relativo esercizio crescente di creatività. Sa fare e scovare errori. In problemi complessi pesca i concetti essenziali alla soluzione da mappe organizzate a pareti non stagne e li formalizza in equazioni: traduce tra linguaggi diversi, dal verbale ad uno ad alta densità di informazione, intermedia tra poesia e musica, usando le diverse intelligenze che compongono in modo unico quella di ciascuno. Lavora in team: per gettare lo sguardo oltre l'orizzonte si sale sulle spalle dei giganti. Pratica l'onestà intellettuale: un risultato non è vero o falso, ma espressione di compatibilità tra teorie limitate da approssimazioni e esperimenti limitati da precisione e accuratezza di misura. Articola la conoscenza concettuale in procedure che applica a casi specifici: un saliscendi dal primo neurone all'ultima falange che usa ogni coriandolo di cervello. Dalle origini dell'Universo all'high-tech, mette in moto immaginazione ed emozioni. La divulgazione è importante poi per chi la fa. È strumento di trasparenza per valutare l'impatto d'uso di risorse pubbliche per la ricerca. Di efficacia: quasi mai chi decide priorità politiche sa di scienza. Di efficienza in ricerca e didattica: esercita l'abilità di ricondurre fatti complessi a concetti sbrogliati da grovigli di dettagli. Infine, si dice che la scienza sia neutra rispetto a differenze di genere o cultura. Neutro è il linguaggio che, come con la musica, quelle differenze sa integrare: e come per le diverse intelligenze, la qualità del fare scienza cresce dove contribuiscono stili diversi di creatività ed esercizio di pensiero. Potevamo fare una rivoluzione culturale e diventare una comunità più abile. Siamo ancora in tempo. L'autrice è docente di Fisica all'Università di Pisa e assessora del Comune di Pisa © RIPRODUZIONE RISERVATA



2013 – Paper online

CHIOFALO M., E' la scienza, bellezza! Son cose da ragazze <http://www.ingegnere.it/articoli/e-la-scienza-bellezza-cose-da-ragazze> (2013)



2009 – Radio

CHIOFALO M,
MAGGI S
(2009). Nobel
Donna.

2008 – Radio

MS. SCIENTIST

- Around the world the fields of scientific research and development remain a male-dominated environment
- According to the UNESCO Institute for Statistics less than thirty percent of the world's researchers are women
- Many women enter a career in science but leave because of roadblocks and challenges. Canada wants to change that
- Brandy Yanchyk's documentary *Ms Scientist* explores how Canada is trying to get female scientists to stay in the fields of science and progress to the top
- Ms Scientist looks at the successes and challenges that Canada's female scientists face
- The film delves into their lives and examines the obstacles that are hindering their success such as balancing family and work, sexual harassment and unconscious bias

Why tell this story now?

- This story needs to be told now because furthering the careers of women and science is one of the objectives of the Canadian federal government at the moment
- In April 2017, Canada's Minister of Science Kirsty Duncan said she is considering whether quotas are necessary to ensure that women land top research posts in STEM fields (science, technology, engineering, mathematics)

<https://vimeo.com/ondemand/msscscientist/279779540>



Lynn Moorman, PhD
Professor
Earth and Environmental Sciences
Mount Royal University



Jackie Dawson, PhD
Associate Professor
Canada Research Chair in Environment, Society and Policy
University of Ottawa



HON. Kirsty Duncan, PhD
Canada's Minister of Science



Lynne-Marie Postovit, PhD
Associate Professor
Department of Oncology
University of Alberta



Jaynie Yang, PhD
Professor
Department of Physical Therapy
University of Alberta



Carla Prado, RD, PhD
Assistant Professor
Director of HNRU
University of Alberta



Luda Diatchenko, MD, PhD
Professor
Canada Excellence Research Chair in Human Pain Genetics
McGill University



Catherine Field, RD, PhD
Professor of Nutrition
Department of Agricultural, Food and Nutritional Science
University of Alberta



Anne Salomon, PhD
Associate Professor
School of Resource and Environmental Management
Simon Fraser University

10 Women featured in MsScientist + message:

- **Anne Salomon**, Associate Professor, Applied Marine Ecologist

<https://www.sfu.ca/rem/people/profiles/salomon.html>

message: sexual harassed as graduate student researcher "gave me the courage to reach out for help", delayed maternity (second child at 43) to manage "a family and a career in science is difficult for women"

- **Monica Gorassini**, Professor, Principal Investigator in the Motor Control

Laboratory https://sites.ualberta.ca/~mag4/index_files/Page380.htm

message: sexism and discrimination (at the beginning of her career the dean offered her a lower position and less money compared to her male colleagues)

- **Kirsty Duncan**, Associate Professor, Minister of Science, Sport and Persons with

Disabilities <https://pm.gc.ca/eng/minister/honourable-kirsty-duncan>

message: her previous experience as been payed 10% less, "my mission: to change the course, to address the challenges we need", targets for women, for indigenous people and for other underrepresented groups

- **Catherine Field**, Professor of Nutrition <https://www.ualberta.ca/agriculture-life-environment-sciences/about-us/contact-us/facultylecturer-directory/catherine-field>

message: balancing work and family life, married, no children, "my students are my children"

- **Jaynie Yang**, Professor in Rehabilitation Medicine <https://www.ualberta.ca/rehabilitation/about-us/contact-us/faculty-directory/jaynie-yang>

message: family and children "the time that you can have children is also the time that is really important for your career"

10 Women featured in MsScientist + message:

- **Lynn Moorman**, Professor, spatial analysis, and geotechnologies

http://www.mtroyal.ca/ProgramsCourses/FacultiesSchoolsCentres/ScienceTechnology/Departments/EarthEnvironmentalSciences/Faculty/ES_Bio_LMoorm

message: maternity leave "you have to bring the baby with you", negative feedback when she put her family first

- **Carla Prado**, Assistant Professor, Nutrition and Health <http://www.drcarlaprado.com/about-dr-prado>

message: family and one child & "I'm pregnant right now", "we were creative enough to balance life", stereotypes -being pretty or being smart? "people telling me i don't look like a scientist", -being a woman in science and being latino

- **Lynne-Marie Postovit**, Associate Professor, Biochemist, ovarian cancer

research <https://www.ualberta.ca/medicine/about/people/lynne-postovit>

message: unconscious bias towards women with a family, integration of work and life

- **Jackie Dawson**, Assistant Professor, Canada Research Chair in Environment, Society and

Policy <https://uniweb.uottawa.ca/?lang=en#/members/342>

message: unconscious sexism in conferences, gay woman in science

- **Luda Diatchenko**, professor first woman to hold a Canada Excellence Research Chair (**CERC**),

human pain genetics <https://www.mcgill.ca/dentistry/research/our-researchers/diatchenko>

message: "through my career I usually was the only woman in the room"

Canada urgently needs diversity in science, tech, engineering and math: report

Experts say 'bro mentality' is a major barrier for women to enter those fields

Anne Gaviola · CBC News · Posted: Oct 14, 2017 5:00 AM ET | Last Updated: October 15, 2017

Ana Sofia Barrows graduated with a degree in medical physics, and the 24-year-old works in the science field. Yet she's been told, on more than one occasion, that she doesn't look like a scientist. She says someone once told her that she looks like someone who should be working in fashion or communications.

Comments like those may seem innocuous, but according to [a new report](#) released by Ryerson University this week, they represent a major challenge to getting more women into male-dominated fields like science, technology, mathematics and engineering, known collectively by the acronym STEM.

Contributors to the report say Canada urgently has to figure out how to foster diversity — whether that's based on gender, race or physical ability — in STEM. It warns of negative consequences for productivity, economic growth, prosperity and our ability to compete globally. In short, the reports says, increasing diversity in these fields benefits everyone.

"The risk of not getting it right is huge," says Imogen Coe, dean of Ryerson's faculty of science, who spearheaded the report. "We're missing out on human capital, we're missing out on human potential."

"Workshops for women in STEM and science camps for girls won't change participation rates of women unless the culture and workplace also increase accessibility by removing systemic barriers and bringing in accountability and consequences,"

Means to move away from the pervasive "bro" mentality in many STEM workplaces. The statistics suggest young women aren't flocking to STEM the way their male counterparts are. The McKinsey Institute points out that in Canada gender gaps are most significant in STEM education and jobs

The report highlights the need to include men as allies in improving awareness around implicit and explicit bias

"We have to acknowledge that there are issues related to who has the power and who needs to share power, and potentially even give up power, in increasing diversity and inclusion,"

"There's this sort of cognitive dissonance between realizing that it's in your best interest and refusing to actually participate."

'Be a scientist or be pretty'

The documentary also looks at what Yanchyk calls "unconscious bias," where female scientists deal with inappropriate comments of a professional or personal nature.

In one example, Jackie Dawson, an Arctic scientist and Canada Research Chair at the University of Ottawa, describes speaking on identical topics as a colleague, who is "a male scientist who has a big white beard and is a tall guy."

Her male colleague is often asked to share his data, while she is often challenged on the accuracy of hers.

For Prado, insensitive comments directed her way have been personal in nature, relating to her looks or her Latino background, Yanchyk said.

"Honestly," said Yanchyk, "someone even ... made jokes about her being a stripper, made jokes about her makeup. It's very upsetting to hear her situation.

"They told her, 'You don't look like a scientist. And you have to choose being a scientist or being pretty.' That was basically it."

Minister looks for signs of gender bias in federal science departments

Emily Chung · CBC News · Posted: Jun 10, 2018 4:00 AM ET | Last Updated: June 10

Federal Science Minister Kirsty Duncan has made it clear that gender equity in science is a big priority for her. And now she's looking beyond universities to scientists employed by the federal government

- 42 per cent of female federal scientists, engineers and researchers who responded thought gender bias was a career barrier
- 27 per cent believe men are favoured in opportunities for leadership roles

The survey was released in March by the Professional Institute of the Public Service of Canada (PIPSC), which represents more than 15,000 federal scientists, engineers and researchers in 40 science-based departments and agencies.

Federal Science Minister Kirsty Duncan



Federal Science Minister Kirsty Duncan has made gender equity in science a priority. (Craig Chivers/CBC)

"A lot of young women would come up and cry in my arms, no exaggeration. And I was determined that I would take action."

"I think we have to know what the data is,"

"We know that diversity and research excellence go hand in hand," Duncan said. "We need different ideas, different perspectives."

"As a former scientist who happens to be a woman, it was not always easy, and I spent 25 years fighting for diversity in research,"

Reinstating the University College Academic Staff Survey that was cancelled by the previous Conservative government.

"I need the data," she said of the survey. "Are women progressing through the ranks at the same rate as male colleagues or Indigenous people or people from minority backgrounds or persons with disabilities, and are they making equal pay?"

More recently, Duncan implemented equity rules for the Canada Excellence Research Chairs program and threatened to withhold Canada Research Chairs funding from universities that don't meet equity targets set in 2006 within the next two years.

"To the [science] community's credit, there are changes being made," she said, noting that women made up 58 per cent of 24 recipients of the Canada 150 Research Chairs announced in March. The program aims to attract researchers from abroad with offers of either \$350,000 or \$1 million a year for seven years.

More than half of federal government scientists still feel muzzled, poll finds

Things have improved since Harper government, but culture change among managers needed, report says

Emily Chung · CBC News · Posted: Feb 21, 2018 4:03 PM ET | Last Updated: February 22

- More than two years after the election of a federal government that says it wants scientists to speak freely, more than half of federal scientists who respond to a new poll say they still don't feel they can
- When asked if they agree with the statement "I am allowed to speak freely and without constraints to the media about work I do at my Department/Agency," 53 per cent of 3,025 respondents answered "No."
- The poll was commissioned by the Professional Institute of the Public Service of Canada (PIPSC), a union that represents more than 15,000 federal scientists
- The voluntary survey, conducted online by Environics Research between May 29 and June 27, 2017, was sent to 15,398 members
- The union has since negotiated language in federal scientists' contracts that protect their right to speak freely about their work and their science



- 20 per cent of respondents said they had been prevented by public relations staff or by management from answering a question from the media or public that they had the expertise to answer (down from 37 per cent in 2013)
- 40 per cent agreed that their "ability to develop policy, law and programs that are based on scientific evidence and facts has been compromised by political interference" (down from 71 per cent in 2013)
- 23 per cent agreed with the statement "I am aware of cases where the health and safety of Canadians (or environmental sustainability) has been compromised because of political interference with our scientific work" (down from 50 per cent in 2013)
- 29 per cent said they were aware of cases where their department or agency has suppressed or declined to release information, and where this has led to incomplete, inaccurate, or misleading impressions by the public, regulated industry, the media and/or government officials (down from 48 per cent in 2013)
- Hasn't changed is the proportion of respondents who say the public would be better served if the federal government strengthened whistleblower protections — 89 per cent, compared to 88 per cent in 2013

- In November 2017, Duncan announced changes to the Canada Research Chairs program with an eye to forcing universities to improve the diversity of gender, race or heritage for those in the position

Canada 150 program results in 'brain gain' for Canadian universities: Duncan

24 scientists have been picked from thousands of applicants to be Canada 150 Research Chairs

Diverse research backgrounds

Duncan has been pushing universities and granting councils to bring up their game in attracting women to chairs jobs — even threatening not to renew funding for other research jobs at schools that don't improve their gender ratios. Fourteen of the Canada 150 research chairs are held by women, which Duncan said is a huge accomplishment.

Each chair position comes with a grant of either \$350,000 or \$1 million, for seven years.

The 24 researchers will work in a variety of fields including theoretical and quantum chemistry, hydrology, vaccinology and bacterial cell biology, new media and environment economics.

They come from institutions across the United States, including Harvard University, UCLA, Duke University and Johns Hopkins University, as well as post-secondary institutions in England, Austria and South Africa. They will take up residence at more than a dozen schools across Canada in almost every province.

