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"Science Is (not) My Thing":
the Construction of Differentiated Relationships to Science Amongst Working-class Children

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Introduction

Are we all equal before science?
What makes science (not) "our thing", (not) "for us"?

"Science" as in science education:

- Natural sciences (Biology)
- Physical Sciences (Chemistry, Physics)
- Formal Sciences (Mathematics, Logic)

Focus on Childhood, Education, Gender and Class

1. **Context and Theoretical Background**
1. **Rationale; Study Design and Sample**
1. **Some Results**

Gender and Science in Education

In the early modern French educational system (Jules Ferry Laws, 1880s), science was considered less socially discriminating than humanities, and science education accompanied school democratization (Albertini, 2006 [1992]).

However, for a few decades, the opposite conclusion has been inevitable: gender, class and ethnicity inequalities persist in scientific studies and careers.

Although those inequalities intersect and combine, the gender gap in science is the more obvious and documented: women are markedly underrepresented in science; the gender gap starts as soon as a choice is offered, and keeps on widening after that.

The leaky pipeline metaphor(Blickenstaff, 2005)
→ **Choices** made by boys and girls during their school years that result in **gender unbalanced** fields

References

Albertini P., 2006 [1992], *L'École en France du XIX^e siècle ànosjours : de la maternelleàl'université*, 3^eédition, Paris, Hachette Supérieur.

BlickenstaffJ.C., 2005, « Women and science careers: leaky pipeline or gender filter? », *Gender and Education*, *17*, 4, p. 369-386.

Context and Theoretical Background

The "leaky pipeline"

In "**Seconde**" (first year of French high school, age ±15):

- **53% of girls and 72% of boyschoose a "scientific"** exploratory teaching

In "**Première**" (second year of high school age ±16), choices for main subjects of the *baccalauréat* – (High school diploma):

- **29 % of girls and 39% of boys pick science as a major**

- **46%** of girls in "Terminale S" (third year of high school - sciences)
- **25-27%** in engineering and fundamental sciences degrees
- **20-23%** of research professors in mathematics, computer sciences, astronomy…

Le « tuyau percé »

Seconde

- **53%** des filles et **72%** des garçons choisissent un enseignement d'exploration scientifique

Première

- **29 %** des filles et **39%** des garçons choisissent le Bac S

- **46%** de filles en Terminale S
- **25-27%** dans les formations universitaires d'ingénierie et sciences fondamentale
- **20-24%** d'enseignantes chercheuses en maths, astronomie, informatique.

References

MINISTÈREDE L'ÉDUCATIONNATIONALE, 2016, « Filles et garçonssur le chemin de l'égalité de l'écoleàl'enseignementsupérieur ».

Context and Theoretical Background

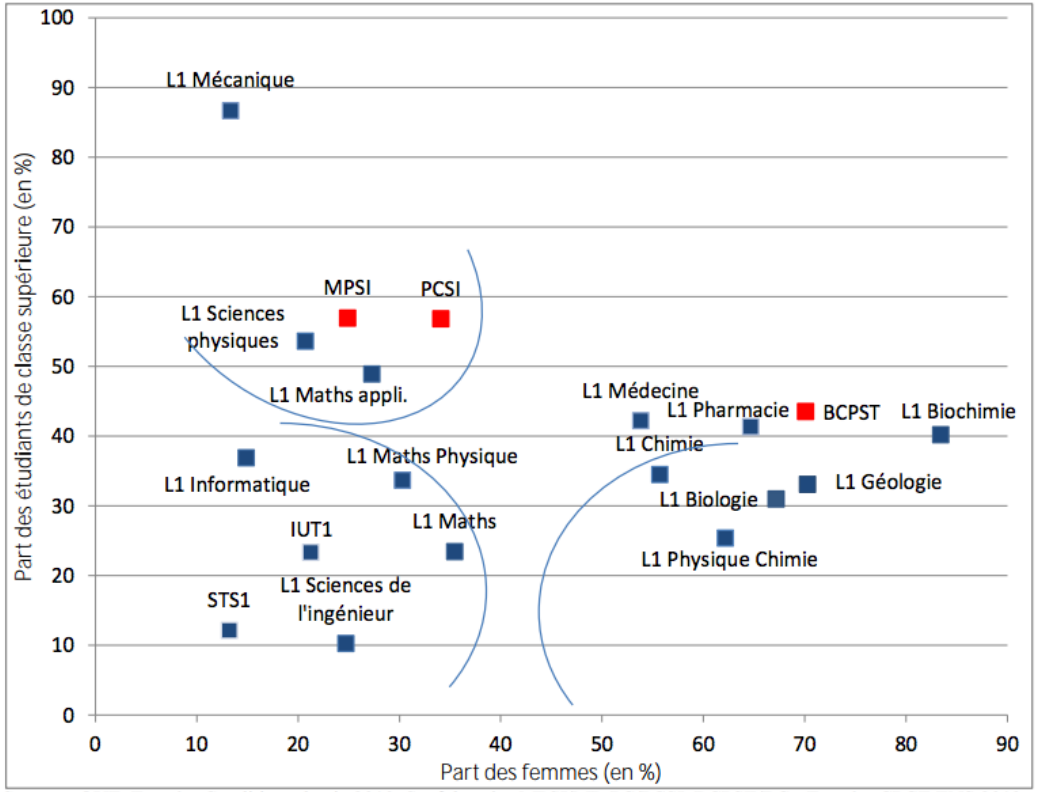
"the socio-sexual division of knowledge"(Mosconi, 1994)
Apolarization of study fields around two poles:
(Blanchard, Orange&Pierrel, 2014, pp. 31-32)

1. Feminine scientific branches: sciences of "care": biology, chemistry, medicine, health.

2. Masculine scientific branches: "pure" and "abstract" sciences: mathematics, physics, computer sciences.

The polarization is linked with gender **and** class, as evidenced by the distribution of women (x-axis) and upper classes (y-axis) students in different branches of higher education:

Graphique I-6. Structuration de l'espace des filières scientifiques (niveau détaillé) de l'enseignement supérieur en fonction du sexe et de l'origine sociale (en 1ère année) (en %) :



Source : OVE, Enquête Conditions de vie 2010. Sauf données MPSI/MP, PC/PCSI, BCPST/BC : Enquête CPGE ENS 2013-14.

References

Blanchard, M., Orange, S., Pierrel, A. (dirs.), 2014, *La production d'une noblesse scientifique : enquête sur les biais de recrutement à l'ENS*, rapport de recherche, Département des sciences sociales de L'École normale supérieure de Paris.

MosconiN., 1994, *Femmes et savoir : la société, l'école et la division sexuelle des savoirs*, Paris, L'Harmattan.

Context and Theoretical Background

Social Inequalities in Science

In 2001, **40%** of children of teachers and executives acceded to a scientific high-school diploma (Bac S), but only **5%** of children of unskilled workers did (Merle , 2002)

France is particularly inequitable: it has one of the most intense relation between students' performance in mathematics and socio-economic status, and performance gaps linked to socio-economic status are stronger for mathematics and sciences than for reading. (OECD 2013b fig. II.1.2.)

How can we explain these inequalities?

It is not a matter of performances or skills

- Girls in who chose science in high school do better than boys: more of them get the diploma (94% vs. 91%), and they get better grades.
- The PISA Study shows a slight difference in favor of boys for sciences performances, but girls are better at sciences and reading.

94% des filles et 91% des garçons qui se sont présentés au Bac S l'ont obtenu en 2014.

38% des filles et 33% des garçons ont obtenu leur Bac S avec mention Bien ou Très Bien (MESR 2016)

References

Merle P., 2002, *La démocratisation de l'enseignement*, Paris, La Découverte.

Ministère de l'Éducationnationale, 2016, « Filles et garçonssur le chemin de l'égalité de l'écoleàl'enseignementsupérieur ».

OCDE, 2013a, *PISA 2012 : Savoirs et savoir-faire des élèves - Performance des élèves en mathématiques, en compréhension de l'écrit et en science (Volume I)*, OECD Publishing. Tableaux : 1.2.3.a ; 1.4.3.a ; 1.5.3.a

OCDE, 2013b, *PISA 2012 : L'équité au service de l'excellence (Volume II)*, OECD Publishing.

Rationale; Study Design and Sample

Since skills and performances alone fail to explain inequalities in academic and career choices, I propose to look at science through a sociological lens; that is not only as a an ensemble of school subjects, but as a **cultural fact.**

This means focusing on children's **relationship to science**, and taking into account:
(ARCHER et al., 2013 & 2016)

- **Attitudes**:
  - Taste: "what I like/don't like";
  - Representations: "what are science and scientists like? Can I identity with that? Is is 'for me, not for me'?"

- **Practices**:
  - classroom participation;
  - engagement in science outside of school (clubs, TV, games, museums…);
  - choices of classes and training, aspiration to become a scientist.

References

ARCHER, L., MOOTE, J. (dirs.), 2016, *ASPIRES 2: Project Spotlight. Year 11 Students' Views of Careers Education and WorkExperience*, London, King'sCollegeLondon.

ARCHER, L., OSBORNE, J., DEWITT, J., DILLON, J., WONG, B., WILLIS, B. (dirs.), 2013, *ASPIRES: youngpeople's science and career aspirations, age 10-14*, London, King'sCollege London.

Rationale; Study Design and Sample

Rationale

In primary school, taste for/interest in science is well-distributed amongst children, regardless of gender and class.

Taste and interest don't play the biggest part in the construct of scientific aspirations. Rather, "an intersecting cluster of social, cultural, and structural factors operate[s] to dissuade and pull girls and women [and working class children] away from science" (ARCHER et al. 2012, p. 968)

→ **What social, cultural and structural factors at play at school determines whether a child who likes science will become a scientist?**

References

ARCHER L., DEWITT J., OSBORNE J., DILLON J., WILLIS B., WONG B., 2012, « "Balancing acts"': Elementary school girls' negotiations of femininity, achievement, and science », *Science Education*, *96*, 6, p. 967-989.

Rationale; Study Design and Sample

Study Design and Sample

Longitudinal study (2013-ongoing)

Cohort of children living in the same neighborhood

- Monitoring of an 4-years educational project for equality in science, set up between schools and mediators from the association RevoluSciences
- Observations of weekly scientific workshop. Three classes; during the two last years of primary school and the 1st year of middle school.
- Individuals interviews with 52 children at the end of primary school
- Interviews with some of the teachers, scientific mediator and parents

Méthodologie et terrain

Étude longitudinale (2013-présent)

Cohorte d'enfants d'un quartier de Lyon 8

- Suivi d'un projet éducatif de 4 ans pour l'égalité en sciences, mis en place entre les écoles et les médiateur·trices de l'association RévoluSciences
- Observations d'ateliers science hebdomadaires pour 3 classes en CM1, CM2 et 6e
- Entretiens individuels avec 52 enfants en fin de CM2
- Entretiens avec certain·es des enseignant·es, des médiateur·tricesscientifiques et des parents

Rationale; Study Design and Sample

Social Characteristics of The Sample

22 girls
30 boys

For the neighborhood where the families live and the schools are located:

- 65.3% of working classes (worker & employees) – 28.5% for Lyon8
- 30.1% of immigrants – 16.4% for Lyon8

90% of the interviewed children have at least one parent who's a first generation immigrant

77% of the children have at least one parent who's a worker or an employee

Caractéristiques sociales de l'échantillon

22 filles
30 garçons

Pour les cinq IRIS où habitent les familles concernées et où se situent les établissements :

- 65,3% de classes populaires (ouvriers + employés) – 28,5% pour Lyon 8
- 30,1% d'immigrés – 16,4% pour Lyon 8

90% des enfants interrogés ont au moins un parent immigré de première génération.

77% au moins ont des parents ouvriers ou employés.

Science as "Other": Children's Representations of Science

What makes a difference? Identity and difference in children's relationships to science.

In primary school, **both girls and boys are interested in science** – even the few children who dislike it at school enjoy scientific activities at home (TV, games…).
The ASPIRES Study reached the same conclusion with a panel of 9000 British students.
(Archer*et al.* 2010)

Practices an participation are also similar for boys and girls: almost all children take part in science experiments during the workshops; those who don't are both girls and boys.

The probability of having scientific extracurricular activities (science club, science games or TV shows…) is more strongly linked with socio-economic status than with gender.

The girls and boys who own scientific games, visit science museum or belong to a science club all have at least one parent who is an employee or an executive.

The process of differentiation is played out in representations: for most of these students, being a scientist is first and foremost "being clever" and "being a man".

References

Archer L., DeWitt J., Osborne J., Dillon J., Willis B., Wong B., 2010, « "Doing" science versus "being" a scientist: Examining 10/11-year-old schoolchildren's constructions of science through the lens of identity », *Science Education*, *94*, 4, p. 617-639.

Science as "Other": Children's Representations of Science

Being a scientist = being clever

When asked who, in the class, could become a scientist later on, children mention those they previously identified as "the top students":

Q: do you think some people from the class could become scientists?

Sami: hum… yes... the **gifted**

Nisrine : Amber! **Because she's clever.**

Charaf: [those students who could become scientists] for me, **they are cut out for it... I mean they are clever, they know a lot of things!**

Enquêtrice : est-ce que tu penses que dans ta classe, y'a des gens qui pourraient devenir des scientifiques ?

Sami : euh… oui… **les surdoués**

Nisrine : Ambre ! **Parce que elle est intelligente**

Charaf : [ces élèves qui pourraient devenir scientifiques] pour moi y sont plus faits pour ça… enfin **y sont intelligents, y connaissent plein de choses, y sont faits pour ça** !

Science as "Other": Children's Representations of Science

On the contrary, "normal students" (and sometimes themselves) seem to many students incapable of becoming scientists. They are not "interested" enough, because they already pursue other aspirations – or not "clever" enough.

Lindsey: I think **none of them could be scientists**… some are not really interested (...) they don't like it, they don't know how to use it

Anissa: **I think no one**. They are not interested in that... Some want to do jobs, but I don't think they'll end up like that. Once, we said what we wanted to do, et then they did not say that. Some said singer, stylist, veterinarian...

Yessine: no... Almost everyone in the class wants to be a football player or be in sports.

Nahima: No one. Oh no, no, no (...) **everything they do is stupid**. Like this one, he dances in class, he thinks he's clever, he says he's gonna be a dancer.

Bilel: my father wants me to be a doctor.
Q: you don't like that?
Bilel: **no, it's fine, but I know it's not for me. I'm not like that, me.**
Q:why is not for you?
Bilel: It's hard, it's too hard. I don't know, I won't make it.

Lindsey : j'crois même **que aucun pourrait être scientifique**… y'en a qui sont pas trop intéressés (…) qui aiment pas, qui savent pas comment employer ça

Anissa : j'crois aucun (…) **y s'intéressent à ça, mais… y'en a y veulent faire des métiers, mais j'crois pas qu'y vont finir comme ça** (…) une fois, nous, on avait dit tout ce qu'on voulait faire, et après **eux y ont pas dit ça. Y'en a y ont mis chanteuse, chanteur, styliste, vétérinaire…**

Yessine: non… presque tous dans la classe y veulent devenir footballeur, ou des métiers de sports

Nahima: Personne. Ha nan nan nan(…)**tout ce qu'ils font c'est bête.** Comme l'autre là, il danse dans la classe, il trouve ça intelligent, il dit il va devenir danseur.

Bilel : Mon père, il veut que je sois médecin
Enquêtrice : ça te plaît pas ?
Bilel : Non, c'est bien **mais je sais que c'est pas pour moi en gros. J'suis pas comme ça, moi.**
Enquêtrice : Pourquoi c'est pas pour toi ?
Bilel : C'est difficile, c'est trop difficile. Je sais pas, j'arriverai pas…

Science as "Other": Children's Representations of Science

Being a scientist = being a man

Although children have integrated a speech on equality ("everyone can do what they want") backed by teachings of the historical conquest of women's rights, they find that gender equality is more principal than reality, and often fall back on essentialist explanations, as evidenced by Gonzalo's statement, in which he maintains a distinction between "women's jobs" and "men's jobs":

"There are women's jobs that a man can do, and women can also do men's jobs!

For instance, sometimes, one says girls don't know how to play football, but girls can play football, as well as boys, and they can work in renovation [his father's job], and men can also clean [his mother's job].

About being an astronaut
We see more men going on the moon, but I think women can do it too! **The moon doesn't say no to women!"**

« Y'a des métiers de femmes qu'un homme peut faire, et les femmes elles peuvent faire aussi les métiers d'un homme !
Par exemple des fois on dit que les filles elles savent pas jouer au foot, mais les filles elles peuvent aussi jouer au foot, aussi bien que les garçons, elles peuvent aussi travailler dans la rénovation [le métier de son père], puis les hommes peuvent aussi faire le ménage [le métier de sa mère].

Au sujet du métier d'astronaute
On voit plus d'hommes qui vont sur la lune, mais j'crois que les femmes elles peuvent y aller, hein ! **La lune elle dit pas non aux femmes ! »**

This could even be a backlash of equality education: if the oppressions of women is over and is everyone have the same rights, the only way for children to make sense of lingering inequalities is to assign them to nature (Détrez &Piluso, 2014).

If "the moon doesn't say no to women", and if no laws is forbidding it, then what is keeping them from doing it? Children provide answers that draw from naturalizing gender stereotypes.

References

Détrez C., Piluso C., 2014, « La culture scientifique, une culture au masculin », dansOctobre S. (dir.), *Questions de genre, questions de culture*, Paris, Ministère de la Culture – DEPS.

Science as "Other": Children's Representations of Science

In order to justify assigning a gender to some scientific jobs (astronaut, engineer = male, for instance), children use two main arguments:

- "it's evident" : "it's their thing", "men like that kind of thing, it fits them", "girls wouldn't want to do that"
- "girls are not good enough" : they lack strength, courage and intelligence to accomplish those jobs

Malika: [computer scientist] it's for men, because **they are smarter.**

Chahira : [engineer] for men, because **girls don't like to touch greasy or dirty things**.

Bilel : [astronaut] for boys, because it's scary.

Ahmed: [mathematician] men do the math, it's better. And they learn more things, that's it.
[archeologist] it's underground **, it's hard for women!**

Malika: [informaticien·ne] c'est plus pour hommes, **parce que y sont plus malins**

Chahira : [ingénieur·e] pour les hommes, parce que **les filles elles aiment pas** toucher les trucs qui sont gras, sales…

Bilel : [astronaute] pour les garçons, parce que **ça fait peur.**

Ahmed: [mathématicien·ne] **c'est les hommes qui font les maths, c'est meilleur**… et… y apprennent plus de choses, voilà.
[archéologue] **c'est souterrain, c'est dur pour les femmes** !

Girls are the harshest with themselves: where boys only mention the lack of physical strength, the are the one who point out that girls are not intelligent enough or too timid to do science.

Even girls who identify as science-keen and declare a lot of science related practices consider that although they are themselves interested in science, it is not "a girl thing".

Science as “Other”: Children’s Representations of Science

For working-class children, and in particular for girls, science is everything they are not: it’s “other” (Gilbert, 2001).

What is the part played by school in this non-identification?

1. “What Is Taught”: Sciences in Formal and Hidden Curriculum
2. Cultural Gaps and Educational Inequalities in the Relationships to Science

References

Gilbert J., 2001, « Science and its “Other”: Looking underneath “woman” and “science” for new directions in research on gender and science education », *Gender and Education*, *13*, 3, p. 291-305.

“What is Taught”: Science in Formal and Hidden Curriculum

Part of the sociology of education is interested in **curriculum:** what is defined as things students must be taught (Forquin, 2008). School programs and textbooks are the official, formal, curriculum, but there is also an hidden curriculum: everything that is learned without open intention – norms, values, representations…

If the formal curriculum advocates science for all, what does the hidden curriculum teaches?

Curriculum caché :
« la part des apprentissages qui n'apparait pas explicitement dans les programmes scolaires, mais qui n'en est pas moins efficace : (…) tout ce qui apparaît en creux dans les manuels, les cours, les exercices, mais aussi par les interactions qui ont lieu dans la classe, la cour de récréation, les conseils de classe... » (Détrez , 2016)

References

Détrez C., 2016, *Les femmes peuvent-ellesêtre de GrandsHommes ?*, Paris, Belin.

Forquin J.-C., 2008, *Sociologie du Curriculum*, Rennes, Presses Universitaires de Rennes.

“What is Taught”: Science in Formal and Hidden Curriculum

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Textbooks

Too few women, too many stereotypes
(Centre HubertineAuclert, 2012)

References

Détrez C., 2016, *Les femmes peuvent-ellesêtre de GrandsHommes ?*, Paris, Belin.

Forquin J.-C., 2008, *Sociologie du Curriculum*, Rennes, Presses Universitaires de Rennes.

“What is Taught”: Science in Formal and Hidden Curriculum

Science classroom and workshops

Too few hours to show science in its diversity (Collet, 2015 ; Lafosse-Marin, 2010)

Although equality before science is explicitly on the RevoluSciences workshops’ agenda – for instance, mediators use neutral language for jobs names – problematic representations are still transmitted whenever attention loosens, be it because a teacher or an outside speaker does not fully take on the egalitarian discourse, or because material conditions in the classroom disrupt the workshop plan.

The notions that science is for “clever” people and for men are therefore present in the classroom.

Science = men

- The main science mediator is a man, and students remember him as being “the scientist”.
- In one of the schools, all teachers are female, and it’s the headmaster, a man, who teaches science.
- At the occasion of a scientific careers forum, students are presented with 5 men and a woman; the men engage male students by talking about football.
- In middle school, female biology teachers demand to be paired with male colleagues during activities, because they don’t think they can handle it on their own. As a result, male teachers lead the workshops.

Science = clever

- The top students are the one who speak up and who are given the floor the most during science workshops.
- In front of the students, the representative of a robotics company insists on the fact that one needs to be a good student and to work hard to become a scientist. He also only mentions male engineers.
- Children are often warned that the science workshop is going to be “difficult” and “complicated”. When things don’t work, students feel guilty that they failed, even when they were not given the possibility to succeed (lack of tools, wrong instructions)

References

Collet I., 2015, « Des papillons pour les filles, des cyclones pour les garçons : la construction précoce d’une division genrée des branches scientifiques, comparaison franco-genevoise » », *Le genre dans les sphères de l’éducation, de la formation et du travail. Mises en images et représentations, colloque international de l’AECSE, URCA*.

Lafosse-Marin M.-O., 2010, *Les représentations des scientifiques chez les enfants, filles et garçons. Influence de la pratique des sciences à l’école primaire*, Thèse de doctorat, thèse sous la direction de Nicole Mosconi. Université Paris-Ouest Nanterre la Défense.

Cultural Gaps and Educational Inequalities in Relationships to Science

Gender, class and ethnicity are important factors of educational inequalities and affect academic success. (Duru-Bellat et Van Zanten, 2004)
Several phenomenon have been documented in sociological literature:

- Girls are academically valued when they are "docile", quite, hard working students. It helps them academically for a while, but turns into a disadvantage as the academic game becomes more competitive (Baudelot&Establet, 1992)
- Boys are valued differently, and particularly for expressing competitiveness. Their performances tend to be attributed to a "gift" or "natural talent" – whereas girls "work hard" (Ayral&Raibaud, 2014; Marry 2000)
- Working-class students are disadvantaged: they are the more distant from dispositions valued in school form. (Cayouette-Remblière , 2016; Thin & Millet 2005; Thin 1998)
- Students from immigrant background are caught in a process of ethnicization of school relations (Lorcerie, 2003; Payet 1995)

→ "expectation effect", "labeling theory", "Pygmalion effect", "self-fulfilling prophecy".
Gender, class and ethnic inequalities intersect in the "making of academic success", and in "the making of scientific success".

References

Ayral, S., Raibaud, Y. (dirs.), 2014, *Pour en finir avec la fabrique des garçons. Volume 1 : à l'école*, Pessac, MSHA.

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Cayouette-Remblière J., 2016, *L'École qui classe. 530 élèves du primaire au bac*, Paris, Presses Universitaires de France.

Delay C., 2011, *Les classes populaires à l'école - La rencontre ambivalente entre deux cultures à la légitimité inégale*, PU de Rennes.

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Marry C., 2000, « Filles et garçons à l'école », dans Van Zanten A. (dir.), *L'école, l'état des savoirs*, Paris, La Découverte.

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Cultural Gaps and Educational Inequalities in Relationships to Science

Identifying working-class boys as "manual workers" rather than as scientists

Many boys use tools and renovate/do mechanical work at home with fathers, uncles, brothers… as a part of their masculine socialization.
Science workshop on robotics use familiar tools and know-how; "handyman" boys do well during these sessions, and link it with their home activities and careers aspirations as mechanical or construction workers (their fathers' jobs). Teachers identify them as good "technicians" as well.

After asking, worried, if the session is going to be "difficult", Rayan is reassured when I explained that he will just have to use the soldering irons carefully: **"that's fine, I'm a technician".**

Célestin: I like It when we make the elevator model… because… **maybe if I want to become and electrical or mechanical worker**, it would be nice to learn how to make elevators in order to fix them.

Wilson: if later we want to be… for instance **if we want to work in a garage**, we'll have a little study of it, so that's interesting.

Après m'avoir demandé, inquiet, si la séance allait être difficile, **Rayan**est rassuré quand je lui dit qu'il va juste faire attention en manipulant les fers à soude. Rayan me dit alors qu'il est bon pour bricoler : « ça va, je suis un technicien ».

Célestin : j'aime bien quand on fait la maquette d'ascenseur… parce que… peut-être que si j'aimerais faire électricien ou mécanicien, bah ça serait bien que j'apprenne comment on fait des ascenseurs, pour pouvoir les réparer…

Wilson : si plus tard on veut faire un métier, si par exemple on veut… dans les garages, et tout ça, bah on a une p'tite étude sur ça… et après c'est intéressant…

These boys' familiarity with tools and techniques used during the workshops becomes a limitation: their focus on the final result – which teachers do not consider the main objective – prevent them from acquiring new scientific knowledge or skills that would be academically valued.

Cultural Gaps and Educational Inequalities in Relationships to Science

Girls and Science: "un-natural" scientific aspirations

Working-class girls can more easily be top students, but it doesn't come without a price. The stigma of being a "nerd" or a "boffin" weights on those who do too well; it is not always compatible with what peers or families value.
Being science-keen can make things harder – it's taking a step further away from standards.

Samiais a good student who likes science – she even goes to a science club. Even so, she wouldn't want to become a scientist, or to look like one :

Samia*about her drawing of herself as a scientist:* I have to put glasses… I have to give her big brows. Look! I am unibrow! **I don't like my drawing, it looks like a real scientist…** with glasses and all. I don't like it!

Q: you wouldn't want to look like a scientist?

Samia: look like, no! Because… all… some female scientist I saw… they are not really to my taste.(…) **They're everything I don't like!** (…)

Q: what do you like? What would you like to look like?

S: someone beautiful, pretty… not… some of them don't even take care of themselves! I don't like that! I'm sure at home, in the evening… they do science!

Samia*se dessine en train de faire de la science :*
Je suis obligée de mettre des lunettes…j'suis obligée de lui faire des gros sourcils… j'suismonosourcil regarde !
J'aime pas, parce que sur mon dessin, on dirait un vrai scientifique… avec les lunettes et tout… j'aime pas !
Enquêtrice : t'aurais pas envie de ressembler à un scientifique ?
Samia : Ressembler, non ! Parce que… toutes… certaines… scientifiques que j'ai vues, comment dire ? Elles ne sont pas très à mon goût, on va dire (…) tout sauf c'que j'aime !
Enquêtrice : et c'est quoi ce que t'aimes ? Tu voudrais ressembler à quoi plutôt ?
Samia : quelqu'un de beau, joli… pas… en plus y'en a y prennent même pas soin d'eux ! Ah j'aime pas ! Je suis sûre le soir chez elles… elles font de la science !

Conclusion

Possibility for young people to develop scientific aspirations is unequally socially distributed. Gender, class and ethnicity are sources of social inequalities that keep some children away from science.

Education plays a role in these differences regarding access to science. Stereotyped representations conveyed by hidden curriculums, differentiated socializations and never explained gaps betweens some families dispositions and what the school form wants: all of this contributes to alienate a lot of students from science.

Girls from all social backgrounds are concerned, and their disadvantages cumulate in the working-classes, but working-class boys are the most penalized throughout their education, especially in science.

In order to fill these gaps et make scientific identification easier, models of science would have to be diversified, in order to change children's and adults' representations.

Thankyou for your attention!