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Gendering the Academy and Research: combating Career Instability and Asymmetries

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GARCIA WORKING PAPERS 11

Experiences of Early Career Researchers/Academics: a Qualitative Research on the Leaky Pipeline and Interrelated Phenomena in six European Countries

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1. INTRODUCTION

In the last decade, the Italian academic system was profoundly modified by a comprehensive reform which recast the institutional governance system, the internal organization of the Italian public universities, academic staff recruitment, selection and career advancement procedures, as well as flexibilizing early career stages (Bozzon et al. 2015). Such reform went hand in hand with substantial reduction of public financial resources devolved to research and development activities and with steady growth in the number of PhD-graduates per year, which almost tripled between 1998 and 2014. The ability of the Italian academic system to absorb the new generation of researchers has significantly reduced over the past decade, and it has only partially been compensated by an increased chance to carry on a research career outside academia in the wider Italian labour market (Martucci 2011; Ballarino Colombo 2010).

The current composition of academic staff reflects the consequences of the recent university reform. Between 2008 and 2014 permanent positions shrank by 18%, but they were not fully replaced by new entrants or career advancements (Table 1). At the same time, there was a substantial increase in temporary positions, all concentrated among early-career researchers. In 2014, more than a third of research activities were carried out by fixed-term researchers and postdoc research fellows. Given the lack of women in top positions, the incidence of non-tenured positions among women is higher than that among men (respectively 40% and 28%) (Bozzon et al., 2015)

Despite these substantial changes in the composition of Italian research staff, the gender gap among the various academic positions seems to remain stable over time (Bozzon et al. 2015). The structure of the Italian academic hierarchy maintains a scissor pattern (Fig. 1). The main bottleneck corresponds to transition to the assistant professor positions. While women outnumber men among students, and the proportion of men and women is quite balanced among PhD students and postdocs, only 46.4 percent of permanent assistant professors are female and 42.7 percent among fixed-term assistant professors (these latter are researchers hired after the introduction of the last reform in 2010). It has been documented that the disadvantage (understood as transition rate) of Italian female academic staff in career advancements did not change between 2000 to 2011 – for transition to both associate professorships and full professorships (Frattini and Rossi, 2012). These career advancement disadvantages of women are documented in various fields of sciences, such as physics (Lissoni et al. 2011) and economics (Corsi 2014), and for employees of the CNR (National Research Council) (Palomba 2000; Menniti and Cappellaro 2000).

In this context, the University of Trento (UNITN) is one of the Italian universities with the lowest presence of women among its research and academic staff (Frattini

and Rossi 2012). In 2014, the proportion of women in the university's entire scientific staff (full, associate and assistant professors, and postdocs) was 29.7%, while the Italian average was 40.5%. Figure 1 highlights how a strong gender imbalance characterized all the academic positions at the UNITN with the exception of students.

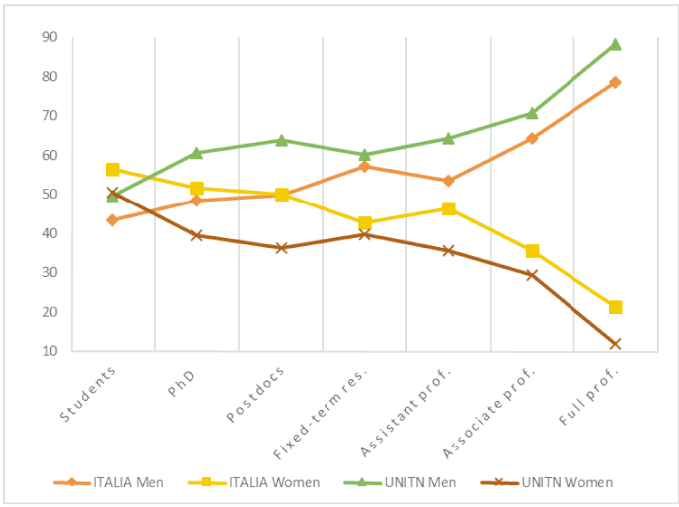
Focusing on fixed-term research staff, which represent the target population of the GARCIA project, the incidence of fixed-term assistant professors and postdocs at the UNITN reached 42.7% in 2014, about 7 percentage points higher than the Italian average. Also in the case of UNITN, given the lack of women among top positions, the proportion of unstable researchers is higher among women than men (respectively 52.6 and 38.3) (Table 1).

Study of the incidence of fixed-term researchers in the two Departments involved in the GARCIA Project – the Department of Sociology and Social Research (DSRS) and the Department of Information Engineering and Computer Science (DISI) – highlights that while in the DSRS these positions represent overall 35.5% of the scientific staff, in the case of DISI they exceed 60%.

The majority of fixed-term researchers (at national, local and departmental level) are research fellows. Postdoc fellow positions are usually financed by external funds and can be considered a proxy for the capacity of each university or department to be involved in useful research networks (within and outside the academic sector) and gather research funding, which is an indispensable feature of their scientific reputation. The DISI at UNITN, with a research staff composed by 57% of postdocs fellows, is an extreme example of virtuous interactions and exchange of resources between the university system and other public and private external interlocutors.

At the same time, postdoc fellows are a paradigmatic example of the precarization of academic careers. Differently from assistant professors, who are public servants with full access to welfare provisions at national, local and organizational level, research fellows are grant-holders not entitled to receive any unemployment benefit or other social security provisions or income support measures because they are considered 'students' (hence part of the inactive population). Moreover, they are often excluded by, or not fully included in, university policies at local level. Because postdocs are not employed with a dependent contract, they are simply not considered part of the university community.

Fig 1 Scissor diagram – University of Trento and Italy 2014



Source: For Italy: Miur data; for UNITN: Ufficio Studi

Tab 1 – Research staff and tertiary students in Italy, University of Trento, DSRS, and DISI in 2014.

	Italy				UNITN				DSRS				DISI			
	M	W	TOT	F/TOT%	M	W	TOT	F/TOT%	M	W	TOT	F/TOT%	M	W	TOT	F/TOT%
Permanent positions																
Full professors (a)	10431	2832	13263	21.4	150	20	*170*	11.8	11	1	*12*	8.3	10	0	*10*	0.0
Associate professors (b)	11300	6241	17541	35.6	181	75	*256*	29.3	16	9	*25*	36.0	22	2	*24*	8.3
Assistant professors (c)	11278	9757	21035	46.4	56	31	*87*	35.6	1	2	*3*	66.7	4	2	*6*	33.3
Temporary positions																
Fixed-term researchers (d)	2209	1649	3858	42.7	44	29	*73*	39.7	5	4	*9*	44.4	4	1	*5*	20.0
Post-doc research fellows (e)	11010	11083	22093	50.2	196	111	*307*	36.2	5	8	*13*	61.5	48	12	*60*	20.0
PhD students	15977	17060	33037	51.6	376	245	*621*	39.5	9	10	*19*	52.6	112	36	*148*	24.3
MA/BA students	728765	948191	1676956	56.5	7988	8131	*16119*	50.4	517	1128	*1645*	68.6	1161	175	*1336*	13.1
%fixed term res./ scientific staff (a+b+c+d+e)	4.8	5.2	5.0		7.0	10.9	8.2		13.2	16.7	14.5		4.5	5.9	4.8	
% postdocs / scientific staff (a+b+c+d+e)	23.8	35.1	28.4		31.3	41.7	34.4		13.2	33.3	21.0		54.5	70.6	57.1	

One of the main aims of the GARCIA project has been since its beginning to identify the main challenges in achieving gender equality in organisations by focusing on the early stages of academic careers as crucial for understanding how universities can prevent the 'female leaky pipeline' phenomenon and better support researchers' careers and working conditions. The approach adopted has been particularly innovative, since we decided not to focus on the leaky pipe phenomenon by looking at women and men still working in academia, as is usually the case in research on gender and research careers; rather, we decided – through the use of both quantitative and qualitative techniques – to understand the reasons why postdocs and early career researchers have been 'forced' to leave academia, or have 'chosen' to work outside the academic/research system.

The 'brain drain' of PhD holders has been analysed from a gender perspective, giving voice to 'leaked' people working as postdocs in two selected departments of the University of Trento – Information Engineering and Computer Science (DISI) and Sociology and Social Research (DSRS) – from the beginning of 2010 to the beginning of 2014, but who were no longer working in those departments at the time of the interviews (conducted between the end of 2014 and the beginning of 2015)

Contacting postdocs who had left the two departments studied was one of the most complicated and time-consuming activities of the GARCIA project. However, in order to understand in depth the reasons for the leaky pipeline phenomenon, we thought it essential to collect the experiences of people who had left the university in order to determine whether they had chosen to pursue a different career, or whether they had been forced to abandon research by discriminatory working conditions and/or organizational cultures that do not support researchers, and particularly female ones, at the beginning of their academic careers, both at professional level and also, and perhaps to an even greater extent, in reconciling their work with construction of a satisfactory private and family life.

Moreover, the research design envisaged interviews not only with respondents who had recently left the two departments studied but also with those still working in them with postdoc or assistant professor positions. By comparing the narratives on the career experiences of the early career researchers who had recently worked at the DISI and DSRS departments as postdocs, who were currently working there with a postdoc position, and who had been recently employed in those departments as assistant professors, we aimed to provide an accurate diagnosis of the leaky pipeline phenomenon and on the main institutional supports and difficulties experienced in the departments studied. Moreover, the use of an inductive approach allowed us to conduct an in-depth analysis which furnished interesting results on the organisational conditions which may help to pursue an academic career, and to devise self-tailored initiatives to be implemented in the two departments concerned.

The chapter is organized as follows. We first present the methodology adopted to collect the interviews. We then move to analysis of the three main categories of early career researchers involved in the project: (i) postdocs who had left/moved; (ii) current postdocs; (iii) newly-employed assistant professors. Finally, the conclusions make some recommendations for tackling the leaky pipeline phenomenon at organisational and national level.

2. METHODOLOGY

At the University of Trento, the study population consisted of a sample of 41 people (12 women and 8 men at the DSRS and 9 women and 12 men at the DISI). Interviews were conducted with early-career researchers, and in particular with three main target categories:

- Twenty one subjects who worked as postdocs from the beginning of 2010 to the beginning of 2014 at the DISI and the DSRS departments. More specifically, in each department, interviews involved PhD holders who: (i) had left the University of Trento to start different working paths unrelated to research (2 for DISI and 4 for DSRS); (ii) had moved from the DISI (9) and DSRS (6) to continue their research careers (in the same or a different country), at public or private universities, at research centres, or in the private sector.

- Twelve postdocs currently working at the DISI (6) and at the DSRS (6).

- Eight assistant professors without a tenure track currently working at the DISI (4) and at the DSRS (4).

Among the interviewees who were working or had worked in the past at the DISI, 5 out of 21 had children (1 woman and 4 men). Among the interviewees who were working or had worked in the past at the DSRS, 7 out of 20 had children (4 women and 3 men). However, among early career researchers still working in the selected departments at the time of the interviews, conducted from November 2014 to March 2015, there were only 3 male assistant professors and one male postdoc with children at the DISI department, and 2 assistant professors (one men and one woman) and 2 male postdocs at the DSRS department (see the table below). Therefore, we were not able to interview female postdocs with children in neither of the two departments studied.

Tab 2. - Interviewees by department, position, sex and number of children

	Male	Female	Total
STEM Department			
Assistant Professors with children	3	0	3
Assistant Professors without children	0	1	1
Current Postdocs with children	1	0	1
Current Postdocs without children	2	3	5
Ex-Postdocs with children	0	1	1
Ex-Postdocs without children	6	4	10
Total	***12***	***9***	***21***
SSH Department			
Assistant Professors with children	1	1	2
Assistant Professors without children	1	1	2
Current Postdocs with children	2	0	2
Current Postdocs without children	2	2	4
Ex-Postdocs with children	0	3	3
Ex-Postdocs without children	2	5	7
Total	***8***	***12***	***20***
Total Interviewees	***20***	***21***	***41***

In constructing the sample, the inclusion criteria also considered the research units in the selected departments, the purpose being to obtain an overview of different research groups. The interviewees agreed to participate in our study on having been fully informed of the research objectives and methodology.

A common interview guide was used for the interviews of all the target categories: the early stages academic staff (postdocs and assistant professors – the target of the WP4 of the GARCIA project) and people who had worked as postdocs at the DISI and the DSRS and moved to other institutions or had left research (the target population of the WP6).

In conducting the interviews, two different temporal perspectives were explored. The first was chronological, related to biographical life-lines, and focused on past professional trajectories and expectations for the future. The second one concerned everyday life, considering both work and other life domains. More specifically, five key areas were explored: 1) individual trajectory; 2) organisational culture and everyday working life; 3) well-being and work-life balance; 4) career development; 5) perspectives on the future. The interview guide was translated into Italian in order to interview Italian PhD holders in their mother tongue. In order to avoid interviewing colleagues working in our same departments, we took advantage of the collaboration of two external researchers.

At the end of the interview, several socio-demographic characteristics were collected: academic field; sex; age; nationality; educational qualifications of parents; professions of parents; relationship status (in couple/married, single, etc.); housing (rented or owned); co-habitation (living in a couple, with friends, colleagues, parents, etc.); children (number and age); partner's employment (type of work; part/full time; type of employment contract); partner's income (net monthly); interviewee's income (net monthly). Due to the small organisational size of the Department of Sociology and Social Research, these data are not included in the report in order to avoid the risk of not respecting the interviewees' confidentiality and anonymity. We faced the same problem for the Department of Information Engineering and Computer Science, but only for the data related to the assistant professors.

The interviews lasted between 50 minutes to 2.5 hours and were entirely recorded and then transcribed. The narratives collected were used for a thematic analysis by adopting an inductive approach. At the same time, a deductive research design was also used by following the guidelines developed within the GARCIA project in order to make possible future comparisons between the empirical material collected at the various universities and research organisations involved in the project. The material gathered was organised and coded using the Atlas.ti software.

The approach adopted made it possible to understand the interviewees' trajectories retrospectively by analysing the different experiences of PhD holders who – after a postdoc at the DISI or DSRS – had 'moved' to another university or the private sector, or who had 'left' the academic or research career to start different work paths unrelated to research. Moreover, as already mentioned, these interviews were compared with those conducted with postdocs and newly-employed assistant professors still working at the departments of the University of Trento. This comparison afforded understanding of the career trajectories of those who had remained compared with those who had moved/left, and the problems encountered by researchers working inside and outside academia.

In what follows, we report findings based on this qualitative analysis. These results introduce a discussion, for the three target categories, of the topics that we identified as key elements: the previous academic career; the reasons for moving from/leaving the DISI and the DSRS; the main difficulties encountered; the current situation (professional and private); expectations and future projects; representations of the most successful academic trajectories. When analysing the collected narratives, particular attention was paid to gender differences, parental situation, and the academic disciplines – Computer Science and Sociology – to which the interviewees belonged.

3. LEAVERS AND MOVERS

In this section we focus on early career researchers who had been postdocs at the DISI and DSRS but were now working elsewhere. In particular, we distinguish between 'leavers', who had left the world of research, and 'movers', who had left the departments analysed but continued to do research in academia or the private sector.

3.1. The previous academic career

The interviews conducted at the DISI and the DSRS evidence the differences between the two departments in regard to the previous academic career, but also a similarity between what the 'leavers' and 'movers' of the same department said.

3.1.1. Leavers

As regards the leavers, in the two departments investigated both men and women had usually remained, for an initial period, within the department in which they had received their doctorates, working with project contracts or as research assistants:

> *"[I received] my doctorate in April 2008. Since then I've had some project contracts, so that I've basically continued to work with the research team that I worked with before" (Woman, former DISI postdoc)*

The main difference between the two departments was that postdoc posts were more often obtained at the DSRS by people who had received their doctorates in the same department, whereas at the DISI it was more common for postdocs to come from other universities. However, it should be borne in mind that the number of postdoc positions is much higher at the DISI: on 31 December 2014, there were 13 postdocs at the DSRS and 60 at the DISI.

3.1.2. Movers

A distinction must be drawn between the DISI movers and the DSRS movers as regards previous professional experience. Whilst at the DISI it is more common, for both women and men, to have linear careers and obtain a postdoc grant almost immediately after award of the doctorate, at the DSRS careers seem more fragmented:

> *"I already knew before finishing my doctorate that there was a quite good prospect of their keeping me. They told me before I finished […]. I worked a lot with *** and he told me that he wanted to continue working with me" (Woman, former DISI postdoc)*

> *"I took the decision to try to get away from academic work to see if I had any other options […]. I got a job at *** but after five months the situation became particularly difficult: […] then after five months I decided to quit because it wasn't giving me anything" (Woman, former DSRS postdoc).*

> *"When the postdoc post finished and they let me know that there was no chance of remaining in the department, I knew I had to reorganize myself. I went looking for other contracts and until I decided to formalize things by opening a VAT position, and in the meantime I applied for teaching jobs" (Man, former DSRS postdoc).*

3.2. Reasons for leaving/moving and main difficulties encountered

As regards the reasons that induced interviewees to leave the respective departments, there were some differences between the DISI respondents and those of the DSRS.

3.2.1. Leavers

At the DISI, among the interviewees who had entirely abandoned research work, the majority said that they had taken the decision for three main reasons: (i) the low level of pay and scant prospects of stable employment; (ii) the difficulty of reconciling private life with work; (iii) professional dissatisfaction.

The first reason was cited solely by the women interviewed:

> *"Speaking of salary, I don't think I was being paid enough at the DISI for the work I was doing. This is because the schedule was such that I had to work almost around the clock […]. Then there was no chance of stabilization in either the short, medium or long term, so basically when I was offered this permanent contract I accepted it immediately" (Woman, former DISI postdoc)*

However, the second reason cited – i.e. the possibility of reconciling private life and work – was mentioned by both women and men, who maintained that research imposes irregular work schedules which preclude commitment to anything except work:

> *"I realized that the work I was doing would have been hard to reconcile with family life and especially with having children […]. I and my wife had two difficult lives because we were both doing research. We weren't Superman or Wonder-woman. So this would have also limited the possibility of managing any future children" (Man, former DISI postdoc)*

However, it should be emphasised that while some men viewed time management as problematic – as in the interview quoted above – in other cases, they perceived it as one of the most positive aspects of being a researcher.

A third reason that had induced some male interviewees to leave the DISI, and research more generally, had to do with personal dissatisfaction due to a difficult relationship with the supervisor and/or the lack of clarity and definition of tasks.

At the DSRS, among those respondents who had abandoned an academic career, the reasons given referred mainly to: (i) the pace of work; (ii) the difficulty of reconciling family life with work; (iii) professional dissatisfaction.

The pace of work and the standards to fulfil in research were described as excessively demanding in terms of number of publications, conferences to attend, teaching, writing projects, and so on, thus leaving little time for private life. Especially the women identified the main reason for leaving the department as the need to invest too many resources in a professional career with an uncertain outcome:

> *"In fact, I've given up my academic career: to keep ahead in the rat race I would have to work at a pace incompatible with my psychophysical make-up. I'll never have a contract as a researcher, I'll never have a stable job. But I try to maintain a mental and physical balance; I'll be happy if I can keep the contracts and research assistantships, but if I can't … never mind!" (Woman, former DSRS postdoc).*

A second reason was cited by the (very few) female interviewees with children. These stated that an academic career was entirely irreconcilable with the family sphere:

> *"With two children it's absolutely impossible to keep up with all the things that the university requires of you to be stabilized. There's no compatibility between the two spheres, so you're forced to make choices: either you focus on the career, and do only that, or you choose to have children, and so you have to look for other jobs" (Woman, former DSRS postdoc).*

Finally, also in the case of the DSRS, some interviewees – all men – had left the department because of a lack of job satisfaction in academia. These accounts did not centre on reasons related to the impossibility of reconciling family and working life, but rather the decision to give priority to one's own interests and research practices over affiliation with the department:

> *"It must be said that research is not always related to academic activity or that of the department. Sometimes research – in more or less fortunate circumstances – is also easier and freer outside departments because these are actually very hierarchical structures and it's hard to find room for manoeuvre […] and then what is the purpose of research in the end? What are its practical outcomes? I think it's important to leave the university system" (Man, former DSRS postdoc).*

In the stories of the leavers interviewed at the DSRS, there were some aspects of experience in the department which were not mentioned among the reasons for leaving research, but which recurred in interviews as particularly problematic issues. A first difficulty related to hostility among different research groups.

> *"A factor that certainly permeates the DSRS concerns negotiation on the policies that orchestrate everything […]. Affiliation is deeply felt and opens the way for people who born already full professors'" (Woman, former DSRS postdoc)*

> *"What I've perceived is that the atmosphere in the department is fraught […]. It's a very hierarchized organization in which there are irreconcilable conflicts, and those affected are the most vulnerable people, those with fixed-term contracts" (Man, former DSRS postdoc)*

Another difficulty experienced by the DSRS leavers was the impossibility of collaborative research. On the other hand, there were interviewees who preferred individual work:

> *"The work that I did was very individual. I didn't have much contact with other people and I didn't feel an atmosphere of collaborative research, which is very important for me [...]. Working on my own was tiresome. The work was fascinating but doing it alone, with just the computer screen in front of me, was harmful in the long run" (Man, former DSRS postdoc).*

> *"I had to achieve the objectives that I had been set. Then I could manage things as I thought best. It was very individual work which frequently didn't involve collaboration with others, but I didn't see this as negative" (Woman, former DSRS postdoc).*

A final difficulty – which was stressed by both female and male "leavers" at the DSRS – concerned employment instability:

> *"When you work with a postdoc grant lasting twelve months, you have to imagine what will happen after those twelve months, and you have to get moving to avoid ending up on the street [...]. It's this precarious dimension of work that weighs you down, and it's always present in research. I suffered experiences that I'd had before. Intermittent periods of work increased my insecurity" (Man, former DSRS postdoc)*

3.2.2. Movers

As regards the DISI movers who had left the department but continued to do research, a distinction should be drawn between the reasons that had induced them to move to other universities and those that had led them to take jobs in companies.

Among those working in academia, both women and men emphasised two factors which had persuaded them to move to other universities: one – expressed especially by non-Italians living far from their loved ones – was the family:

> *"I moved from the department to my country for personal rather than professional reasons [...]. I know it was fortunate for me to be back in ***, so at least I could be around the family. But it was really purely for personal, rather than professional reasons" (Man, former DISI postdoc).*

The second factor had instead to do with, first, the desire to have international opportunities – especially at universities of prestige in the interviewees' areas of interest – and second, the desire for different experiences:

> *"I liked working at the DISI, but I wanted to gain different experiences [...]. I think it's better to have more than one experience in different places than to have a very long one [...]. So I moved just to get better academic experiences. Basically that's the main reason" (Woman, former DISI postdoc).*

Among the DISI movers currently doing research in the private sector, the decision to work in a company was instead explained, by both women and men, as motivated by the desire to achieve the greater stability – in terms of contract and career – offered by companies with respect to universities:

> *"I applied for a job at *** because basically there was no chance of staying at the DISI. So I could either remain there with a totally precarious post without any stability or guarantees, or look for another job but one still linked to research, because it's what I like and what I want to do" (Woman, former DISI postdoc)*

> *"I didn't have any chance of staying there. Actually for the last six months I looked around for a job. I tried to write proposals for the European Commission or something like that, but I was not lucky at that time and found nothing. When I was offered a chance to enter this institution with a more stable contract, I accepted it" (Man, former DISI postdoc)*

Interestingly, while none of the movers working at universities had children, several of those employed by companies did so.

Among those working for a company, another reason for leaving academia was the different level of concreteness of research conducted at universities and in industry. In fact, some of the interviewees working at the DISI saw university research as highly theoretical and excessively abstract. Research within companies was different, they said, because it has a greater impact on society:

> *"Research in the company is much more concrete, and that's what I was looking for [...]. During the PhD I thought that I'd like it a lot more, but I eventually realized that I wanted something more concrete because you don't know whether or not what we produce as researchers will be used by someone in twenty years' time" (Man, former DISI postdoc)*

> *"I'm doing much more applied research. Because that's my goal. For me, technology is a tool, and I want to use it for projects that have a social impact. So, let's say, rather than theoretical research, what is needed is technology to implement [...]" (Woman, former DISI postdoc).*

Finally, among those interviewees doing research in companies, there were both respondents who described the lack of teaching activity as a bonus and those who were nostalgic about their teaching duties when they worked at universities.

> *"When I was at the DISI, I also had to teach. It wasn't something that I particularly liked ... also because it often slowed down my research because I couldn't devote myself one hundred percent to it as I'd have liked" (Woman, former DISI postdoc)*

> *"One thing that I miss somewhat is having discussions with students. I know that many of my colleagues consider teaching to be the boring part of the researcher's job, but for me it was never like that. Indeed, some students even gave me important inputs for my research" (Man, former DISI postdoc)*

Among the DSRS movers, we found none who were currently doing research outside the academic system, but only researchers who had changed university, remaining in Italy or moving abroad.

> *"When I received this proposal and accepted it, the Sociology department no longer had the problem of finding funds to keep me there. This is not an accusation but a matter of fact [...]. It is not that I was encouraged to leave, but when I spoke to the department about this proposal, they told me that it was fine by them. As if to say: go, because there's nothing for you here" (Woman, former DSRS postdoc).*

Only very few of the interviewees had moved to other departments after obtaining a post as an assistant or (more rarely) associate professor.

Also in the case of the movers, interviewees in both departments cited difficulties experienced during the postdoc; but these were not presented as the reasons for exit from the department.

As already said in regard to the leavers, a first difficulty was the lack of cooperation within the research group to which the interviewee belonged. However, among the movers it was mainly women who reported a lack of cooperation among members of the team.

> *"The things that I didn't like very much were how that group was organized and how there was no real interaction in it: it was as if every member did their part without really constructing something … and working together. And this was sometimes rather frustrating, because they saw something as an end in itself […]. Each member had lots of potential but didn't share it. The work was very individualised. This is what I perceived" (Woman, former DISI postdoc).*

> *"I always felt like an appendage without being part of something … I always had this sensation of suffocating […]. I never felt fully integrated into the group's dynamics. I don't say that I was marginalized, but it was something that I sometimes felt. Perhaps because they knew that I wasn't going to stay there long and had no desire to invest in relationships which would not last long" (Woman, former DSRS postdoc)*

The majority of the male "movers", however, in both departments, described a high degree of collaboration among the members of the group – even ones with different disciplinary backgrounds – when they worked as postdocs:

> *"I think it's incredibly structured and collaborative. In fact, the way that people integrated and worked together was quite a revelation, I'd say […]. The philosophy of the group was very efficient and everybody had input to give and people were valued for their input. The group was so collaborative and everybody was able to discuss the work that they were doing and get feedback from other people; I think it's a very useful way of collaborating" (Man, former DISI postdoc).*

> *"My relationship with the other members of the group was great. We went out together and also met outside the department […]. We often collaborated, writing articles together" (Man, former DSRS postdoc)*

If attention shifts from the research group to the climate more generally perceived within the department, apparent during the interviews were a number of critical issues regarding the DSRS which both men and women reported.

> *"I remember how hard it was to enter the department on some mornings, because I was associated with a particular group, and if I met a member of the Ghibelline or Guelph faction on the stairs, they'd scowl at me or wouldn't greet me, not even in response to my own greeting" (Woman, former DSRS postdoc).*

> *"It seemed to me that they had a parochial mentality: there were several people tied to research groups rather than to certain lecturers […]. I sensed that they reasoned according to the scheme that 'I'm on this side, and for any*

proposal made by a colleague from another group I'll always be a nit-picker and find a reason to say that it's no good'" (Man, former DSRS postdoc).

Another difficulty experienced by a number of interviewees – at both the DISI and the DSRS – concerned work not envisaged by the terms of the contract. At the DISI, these 'extra' tasks were mainly due to requests by project coordinators to 'lighten' their workloads. It was also one of the areas in which gender differences were most evident:

"Another thing which wasn't very nice was that I had to work on a European project. But I also did work that wasn't pure research at all: I organized conference calls, talked to the partners, emailed … which was not what I imagined when I got this post" (Woman, former DISI postdoc)

"I helped with the writing, but the network, maintaining contacts with the partners, emailing, organizing project meetings and all these thing… I was not really involved, there was a colleague, another postdoc who took care about these activities, and pretty well too" (Man, former DISI postdoc)

Also at the DSRS there was this implicit request to do work unrelated to research; and also in this case there were differences between women and men.

"I wasn't asked to do anything particularly heavy … there was perhaps the expectation that I would organize some workshops or seminars. Activities anyway related to my subject and which I was interested in doing. I didn't feel any particular expectations about these things; they were more things that I wanted to do" (Man, former DSRS postdoc).

"During the postdoc I attended to everything, I did everything: I booked dinner tables, I took visitors around, I babysat for people who came for a few months, I did everything for the research group to which I belonged, not what others were asked to do …" (Woman, former DSRS postdoc)

As well as a different distribution of roles, in some cases the women interviewees described gender inequalities also in the behaviour of male researchers towards them:

"I really feel that I should say this, because it's something that's well known, and I think it's because we study and work in a scientific-technical field […]. In some cases I've had the impression that if a woman gives a technical opinion, offers advice, a suggestion or a point of view, the other person is already doubtful or anyway goes to check with a colleague, maybe a man" (Woman, former DISI postdoc)

"There were a whole series of masculinist attitudes disguised as gallantry, so jokes about how cute you were, opening the door for you, lots of idiotic and gratuitous smiling… a whole range of highly irritating behaviour of that kind" (Woman, former DSRS postdoc)

Conversely, the men working as postdocs in the two departments said they had not noticed any difference in treatment by their colleagues of one or the other sex. However, in both departments, the male interviewees maintained that there was an implicit tendency for positions of greater responsibility to be allocated more often to men than to women.

As for the leavers, who had left research, so for the movers – who instead continued to do research but at other universities or research centres – reconciliation of work and

family life was often cited among the difficulties encountered, but with important gender differences.

At the DISI, most of the men movers said that they could balance work and private life during their postdocs. In fact, contrary to what had happened during their doctorates, they had managed to achieve a balance between the two spheres by imposing more or less definite schedules on themselves and trying not to work at weekends, except to meet specific deadlines:

> *"During that period I didn't work after six thirty or seven in the evening. I might work after seven if I had a deadline. But if I didn't have one, I left the office and switched off completely. At the weekends we went into the mountains with friends, and I found a bit of time for myself … I checked my emails on Monday" (Man, former DISI postdoc)*

The same scenario was described by the women without children, who said that they had gradually set limits on their work. The only woman with children interviewed at the DISI, who had to move another university, instead stressed the difficulties that she encountered with maternity:

> *"I can't work more because my body won't let me. If the girl falls asleep at nine, say, I can't work in the evening because I just can't stand it psychologically, I can't concentrate anymore, I'm tired, there are other … more things to do at home than before […]. Now I really don't feel well, I don't feel that I do enough work and that I work as I did before. And I know that it won't be like that any longer" (Woman, former DISI postdoc)*

Of the same opinion as this interviewee were the DSRS movers, both women and men, both with and without children. At the DSRS, in fact, the movers shared a narrative which centred on the reconciliation issue:

> *"On the one hand I feel guilty about my work because I can't give it one hundred percent – even if they make me understand that I must always be up to scratch and show that I am. On the other, for the same reason I feel guilty about my daughter. The thing that happened and still happens is that when I'm with my daughter, I'm still thinking about work. It's a schizophrenic situation: I'm never completely on one side or the other" (Woman, former DSRS postdoc).*

Research is therefore described as a profession that does not allow periods of interruption which would slow down the activities required by the department for someone to be deemed worthy of career advancement.

3.3. The current position

3.3.1. Leavers

The interviews with respondents who had worked as postdocs at the DISI but were no longer researchers revealed a significant difference between men and women. The former were satisfied with their current jobs, and their narratives entirely reflected their enthusiasm. In fact, they had been able to find jobs which, though distant from what they had done previously, gave them a great deal of personal satisfaction:

> *"I didn't feel satisfied with what I was doing. I realized that research was not for me. But when I started doing *** I immediately understood that this was the job that I wanted to do for the rest of my life because it fulfilled me" (Man, former DISI postdoc)*

The women leavers interviewed were very few in number, but their stories described pathways different from those of their male colleagues. These women, in fact, not only had jobs inconsistent with their previous experience and qualifications, but in some cases they were deeply frustrated:

> *"Everything I've done since the doctorate, I could easily not have done at all. Even my degree is too much compared with what I do now in my job, because to be *** you need skills which were not on my degree programme and which I haven't acquired in my experience [...]. Let's say that I'm not satisfied with my job if I consider it on the basis of my curriculum and my previous professional experience" (Woman, former DISI postdoc).*

The DSRS leavers, who had (at least temporarily) left research, reported several episodes of unemployment:

> *"I've been writing projects for months, and I'm waiting to see if I'll get the funding. I'm in contact with various people to see if I can join a research team and get back on the bandwagon. This is my first episode of unemployment" (Woman, former DSRS postdoc).*

Other women interviewees were likewise awaiting contracts that would allow them to continue in research, or they were concluding activities related to previous contracts, even though they had formally terminated. The men leavers seemed to be in hybrid situations more often than the women. It is also interesting that, whereas the women more often sought assistantships and projects which matched their research interests, the men were more willing to quit their specific field of expertise and 'reinvent' themselves according to the jobs on offer.

3.3.2. Movers

Analysis of the interviews with respondents who had worked as postdocs at the DISI, and were now at another university, showed several cases of interviewees with a second postdoc post:

> *"I didn't get any offers, so I accepted the Marie Curie fellowship and then moved to *** to start another postdoc fellowship, which will last two or three years" (Woman, former DISI postdoc)*

Others had obtained assistant professorships, although not tenure tracked, again related to research or academic work. To be noted is that among those interviewees continuing in research, all of them – both women and men – had fixed-term contracts:

> *"My current contract is a fixed-term contract, which is for two years [...]. But neither is this one guaranteed, so I still have to bear in mind that at the end of that timeframe I may not have a job at all, and therefore this is another reason for making so many applications for different posts [...] "(Man, former DISI postdoc).*

As already pointed out, among the movers of the DISI, unlike those of the DSRS, different stories were recounted, by both male and female researchers, about work in the private sector.

> *"I applied for the vacancy open here and I got the job. I'm head of *** and I have a three-year contract which sets various objectives […]. When *** assesses whether these objectives have been achieved, they should give me a permanent contract" (Woman, former DISI postdoc).*

While not all the women had permanent contracts with the company where they worked, all the male interviewees who had moved to the private sector had achieved contractual stability and also positions of responsibility:

> *"I now have a permanent full-time contract. I have a company car, I don't have to clock in, I have thirty days of holiday and I can take another six because I travel a great deal […]" (Man, former DISI postdoc).*

Turning to the DSRS, to be noted is that all the movers were currently working in other departments and universities (none of them was doing research in the private sector), and the majority of them had postdoc contracts. Only very few of the respondents, and in this case mostly women, had obtained assistant professorships:

> *"What I teach now at *** is the same subject that I taught at Sociology […]. Last year was the first year of this kind of teaching because my contract at Sociology wasn't renewed, for no particular reason. There was a call for applications to ***, I was successful, and now my appointment has been reconfirmed" (Man, former DSRS postdoc).*

The main differences between the current and past postdocs at the DSRS were described by those who had moved to a non-Italian university. In particular, they stressed the different 'mentality' regulating academic life, less marked by hierarchy or power relations, readier to recognize different research interests, and where early career researchers appeared to have a greater degree of agency.

Finally, as for the DSRS leavers, so for the movers there seemed to be a strong sense of insecurity, which sometimes had a significant impact on the choices of interviewees:

> *"I reasoned in terms of factors concerning academic work […]. For a time I reasoned in terms of investment, but this was replaced by an objective problem, that of economic insecurity" (Woman, former DSRS postdoc).*

3.4. Expectations and future projects

As regards expectations and future projects, to be emphasised, and in regard to both leavers and movers, both men and women, is the difference of opinions between the DISI and DSRS interviewees. In fact, at the DISI the future envisaged by early career researchers seemed to be quite positive and hopeful, especially if there was a willingness to move abroad – a possibility not regarded as problematic by the interviewees:

> *"Obviously [the future prospects of researchers] are more than promising […]. I think that in the future there'll be a great deal of work, because technology is evolving rapidly, and then there'll also be a whole range of possible*

applications and problems to solve. So I think that there's a lot of scope" (Man, former DISI postdoc).

The DSRS interviewees, by contrast, described the future of research in gloomier terms:

> *"I don't want to be pessimistic, but what I see is less and less reliance on research, especially on the research that we do […]. Then it must be said that our work as social scientists is not appreciated. Here sociologists don't do sociology but instead work as politicians, bureaucrats, administrators … there's no investment in sociologists, and with this mentality who knows what will happen? I don't have a very positive vision of the future for us researchers" (Woman, former DSRS postdoc).*

3.4.1. Leavers

The expectations and future projects, as regards both profession and family, of the DISI leavers were rather different between men and women. The majority of the men felt very satisfied with their current work and would like to continue with it in the near future. Some men, but especially women, leavers from the DISI were instead not satisfied with the work that they were doing because it often did not allow them to put skills acquired over the years into practice.

> *"I honestly wouldn't mind returning to research, but in the private sector and not in the academic system, because nothing has changed in university research since I left it. The people who were working there are still precarious and see no chances of being stabilized […]. I like doing research work, but I see it more as something to look for in the private sector" (Woman, former DISI postdoc).*

Also among the DSRS leavers there was a difference between the statements of women and men. The former would mostly like to continue working in research, but in conditions different from those that they had experienced at the DSRS, and especially ones related to contractual stability. One of them, moreover, was unwilling to leave Italy because she considered herself an asset for the country and because she felt bound by family dynamics. The male DSRS leavers seemed rather more discouraged and did not believe that they could return to research:

> *"Awful, that's how I imagine the future. I imagine a future I don't know how closely tied to research, but a future that will come sooner or later, and I must prepare myself in some way … for this reason not directly connected with research" (Man, former DSRS postdoc).*

3.4.2. Movers

A first interesting element of the future prospects of the DISI movers was that a large proportion of those working in universities – both men and women – were considering the possibility of moving to private companies to do research:

> *"The university has temporary contracts, and the risk is that you'll reach the age of forty and still not be certain about anything. You can't start a family because you don't know if you'll be able to support it because you don't have a fixed salary. The ideal for me would be to continue working in research because I like it, it's my passion, but I also realize that if it doesn't give me*

stability, I'll have to move to industry, where you have more guarantees" (Man, former DISI postdoc).

This employment situation impacted on future family expectations that prevented making long-term plans. In fact, both women and men working in universities had the same opinion about a future family and stressed that research – and hence the irregularity of work and schedules – did not allow them to think about having children, who would be obstacles to the rhythm to be maintained in research:

"I don't think I want children, at least not at the moment because I'm going through a phase of my career that requires a lot of energy. Having children stops you from a professional point of view because you go out of the loop. I don't want that because I want to fulfil myself in terms of a professional career" (Woman, former DISI postdoc).

Most of the interviewees who did research in companies, however, had more precise ideas about their futures, both familial and professional. All of them, both women and men, expected to stay in the same job with a career ladder to more prestigious and better-paid positions. Moreover, an important difference between men and women leavers working in industry concerns the prospect of having children. In fact, whilst most male interviewees working in industry intended, in the medium or short term, to start families, most of the women procrastinated:

"I'm someone who tends to tread carefully. So until my prospects here become a bit more secure, to be honest, having children is a matter that I've set aside. A little because I have not this predisposition – in the sense that being an engineer is intrinsic – and a little because I want to concentrate entirely on my career" (Woman, former DISI postdoc)

As highlighted by the above interview excerpt, the women interviewees who had worked at the DISI believed that a career in science, especially in technology, and having children were mutually exclusive. Some said so because a family would hamper their career development, adducing arguments mainly to do with an organizational and professional culture based on total devotion to work. Others were not concerned about potential difficulties related to maternity because having children was not among their desires and life plans.

As regards the movers of the DSRS, once again it was the women who most often imagined their futures within academia, even if they had no certainties, while the men would be more willing to do research in non-academic contexts:

"My future is difficult to foretell. I see it in the academic system because in any case, with all my past experience, I'm now investing and working to stay at the university in order to build an academic career. What will actually happen I don't know" (Woman, former DSRS postdoc)

"I see myself still doing this type of work in the future, because I like doing research. Not necessarily at the university, but perhaps in another context, with somewhat higher pay, because in the meantime I'll have acquired more experience and can tell the commissioners that I have experience on the issues that they want me to study and I can give added value" (Man, former DSRS postdoc)

It should also be emphasised that many of the women interviewees at the DSRS wanted to have children, but their work insecurity forced them to postpone the decision:

> *"At the private level I can't deny that I'd like to have a child, but at the moment it's a difficult choice, and it also depends on how things turn out. If I don't get some stability, at least to ensure that I can maintain the baby, I certainly won't take such a reckless decision. To have a baby you need security so that you can have a decent standard of living. At the moment I don't have that security" (Woman, former DSRS postdoc).*

The men movers at the DSRS were of the same opinion as the women. Also from their point of view the decision to have children depended on achievement of job security which would enable them to maintain the children with no worries about the future.

3.5. The 'best' trajectory for career development

The interviews showed that there were several components of the 'best' trajectory for career development. The most important of them were fundraising, the number of publications – preferably in leading international journals – internationalization, interdisciplinarity, and especially membership of prestigious research groups.

As for fundraising, much appreciated was the project culture whereby it is possible to do research work by independently obtaining funds for it. Linked to this principle is that of publications – preferably in English and in journals with a high impact factor.

An element stressed by a number of interviewees was the professional maturity of a candidate for a research post. Several interviewees said that, in the Italian academic context, the selection of winning candidates is filtered, even if not explicitly, by age. According to the interviewees, in fact, the Italian academic culture seems unable to break the relationship between a long 'apprenticeship' and achieving more stable positions, regardless of whether or not younger candidates have experience that would allow them to compete – like the 'older' ones – for the (few) positions available.

Hence, although rhetorically importance is attributed almost exclusively to publications in selection procedures for assistant professorships, in practice they seem to be outweighed by the criterion of age. Likewise, interdisciplinarity is another feature considered – in abstract – as essential for career development. Yet it seems that openness to other disciplines is deemed important but not given particular recognition in the evaluation phase. According to interviewees from both departments, interdisciplinarity was instead penalized because it prevented clear allocation of a researcher to a specific disciplinary area in terms of both selection procedures and publications.

A final factor cited by the interviewees as being important for career development was internationalization. It is widely believed that an international reputation demonstrates scientific excellence. However, in this case too, the interviewees said that visibility in the scientific community and internationalization are rhetorically considered key criteria for career development but in practice are often given secondary importance.

In summary, the interviewees considered the best trajectory as that of researchers able to build solid relationships with members of the department and/or obtain funds for research projects of international importance, and to have publications in prestigious

journals. Also described as essential was having worked, or at least spent periods as a visiting scholar, abroad, and having significant teaching experience. Finally, the prestige and negotiating ability of the supervisor seems to be crucial for obtaining a more stable position after one or more postdoc grants.

To conclude, the situation at Trento University as described by the leavers and movers seems to have been a hybrid between modernity and tradition. Modernity was conveyed by a rhetoric related to internationalization, the quantity – and quality – of publications of international impact, and fundraising; while tradition was transmitted and perpetuated by a logic still widespread in Italian universities whereby criteria of co-option, affiliation, and membership are still the tacit rules for promotion and career development.

4. POSTDOCS

A postdoctoral position is the intermediate and transitional phase between the initial step of an academic career represented by a PhD and an assistant professorship – a position which leads (if things go well) to more stable positions. Also in the case of postdocs, the interviews conducted in the two departments examined by this analysis – the DISI and the DSRS – revealed significant differences among the interviewees.

The first difference concerned the perceptions of postdocs of life in the department where they worked. In fact, while at the DISI postdocs were perceived as an integral part of the department, at the DSRS they labelled themselves outsiders: that is, people who collaborated with the department but were not involved in its everyday governance.

Another feature that differentiated, at least in part, the DISI from the DSRS postdocs was the perception of employment instability that permeated their working lives. As already evidenced for the leavers/movers, while the respondents at the DISI did not seem particularly concerned about the precariousness of their posts, those at the DSRS were more overtly worried about it. The DSRS interviewees cited not so much concern about pay levels (an element instead sometimes apparent in the DISI interviews) as the problem of employment instability. The different perception of job insecurity of those working in STEM or SSH disciplines has also been found by Nikunen's (2011) research on academics with temporary contracts in three Finnish departments: technical sciences, humanities, and natural sciences. Analysis of the interviews conducted by Nikunen showed, as did our research, that the perception of job security differed among the various departments. Those respondents working in technical sciences did not perceive employment instability as particularly problematic, unlike those in the humanities. This finding can be interpreted by considering the greater ease with which academics in STEM disciplines, compared with SSH ones, can find skilled jobs in the private sector outside the academic context.

A final feature distinguishing the two departments concerns the different types of position to which postdocs were appointed. While postdoc positions at the DSRS were based exclusively on projects – national, European and international – at the DISI they were also obtained on the basis of research commissioned from the university by private companies.

4.1. The previous academic career

It is first of interest to reconstruct the previous academic experience of postdocs at the DISI and the DSRS.

As regards the DISI, the interviewees had followed a fairly linear pathway and which was very similar for almost all the interviewees, both men and women. In the majority of cases, after completing their doctorates, they had obtained a postdoc post on a project, and frequently one with European funding. The research work required of them did not significantly differ from that of their doctorates, either in terms of activities or interactions with the research group:

> *"I finished my PhD at the beginning of April […]. Basically, after finishing my PhD I started right away as a postdoc with the same professor at the same university, and everything; basically I was continuing the work I'd done for my PhD, just carrying on from my PhD" (Man, DISI postdoc).*

Another feature common to the experiences of men and women working as postdocs at the DISI concerned recruitment. Interviewees of both sexes stressed the importance of the doctoral supervisor for the first post following graduation. Whilst some of the interviewees had doctorates from the DISI, the majority had PhDs from other universities but had nevertheless previously worked with members of the DISI.

> *"In my experience, unfortunately, all the calls for applications are made with people already in mind, and they are tailored to the person then hired. This has been my experience. That's why you see a perfect match between the curriculum of the winner and what they require […]. It's obvious that in the case of postdocs they need very specific people, and it's clear that the supervisor decides in targeted manner on the basis of trust or reputation. And this is what happened to me" (Woman, DISI Postdoc).*

As regards the DSRS, the career path was described as less linear than that of the DISI interviewees. Only some of the respondents were immediately recruited into the DSRS after obtaining their doctorates in that department. Some, not having found a position after the doctorate, had done other work, and only later, thanks to contacts maintained with the DSRS, were recruited to a postdoc position:

> *"On completing my doctorate I found myself, like everyone else, needing to find a future career which matched my previous studies. At that time I didn't have any offers, so I looked around […]. But I'd maintained contacts with Trento, and in the meantime a lecturer for whom I'd been an assistant got funding for a project and asked me to work as a postdoc" (Man, DSRS postdoc)*

We found partly different situations among the women. In fact, whilst some of them had obtained a postdoc position through contacts with lecturers responsible for project funds, others had instead continued to work at the DSRS thanks to projects obtained by themselves and financed by resources external to the department:

> *"There were these calls for postdoc applications by ***, so it had resources to finance research projects for postdocs. I proposed a project, which was financed on the basis of my curriculum. The department had nothing to do with it. It was something that you do as an individual, finding the host institution and nominating a scientific coordinator from within the institution.*

I'm in the department as a postdoc, with funds that I myself have brought to the department [...]. I did the fundraising at no cost" (Woman, DSRS Postdoc).

4.2. The current position and the main difficulties encountered

The difficulties encountered by male and female postdocs at the two departments analysed evidenced different scenarios.

4.2.1. Participation in departmental life

As regards the DISI, both the women and men emphasised a positive and informal departmental climate among the various members of the research group:

"There's usually a full professor and the associate professors, who do what he tells them or work closely together. Then there are the researchers, then there are the postdocs, then there are the PhDs. And this pyramid structure is very strong in certain departments. The DISI is very different from this model. There's a horizontal model and the climate is very calm [...] everyone has always provided the conditions for me to do my research calmly, and they've really taken care of me and my work" (Woman, DISI postdoc).

At the same time, although the general climate of the department was positive, a large proportion of the interviewees – both women and men – said that they had not found a good level of collaboration at the DISI among different research groups. In fact, each research unit often carried out its activities independently from the others, and regret was expressed at this lack of inter-group interaction. By contrast, for both men and women, collaboration was very close among members of the same group.

*"I collaborate with many people besides those in my group. My group has more than twenty members, and it's not that I work only with ***: ***, I do things with ***, and we also have some previous stuff, things that we're writing and doing with some PhD students. We have overlaps with other postdocs, and we try to do some things together." (Man, DISI postdoc).*

Even more than at the DISI, the DSRS postdocs, both men and women, had professional interactions almost exclusively with members of their own research unit. They perceived themselves as marginal with respect to the department as a whole:

"I personally – and others as well, I think – don't feel that there's a departmental climate, but rather the climate of my research group. From this point of view, I'm a bit of a lone wolf, for better or for worse I do my own thing [...]. I don't notice a departmental climate, I don't have close relations. There's an aseptically cordial atmosphere among people" (Man, DSRS postdoc).

Some respondents also highlighted situations of scant interaction within the group to which they belonged, especially because of the lack of collaboration between tenured and non-tenured researchers. In other cases, they instead experienced positive cooperation within their research area:

"I'd say that there is a very good work climate in my research group. I feel fine. It's formal when it has to be, but also very friendly and with close personal relationships on another level [...]. From the internal point of view I'd

say that I'm very satisfied with the cooperation among us" (Woman, DSRS postdoc).

However, whilst good relationships with the research group allowed maintenance of good-quality work conditions, the topic of fragmentation among different groups recurred in the narratives of respondents, both men and women, with regard to recruitment processes and possibilities of continuing the academic career.

"Also the recruitment process takes place according to the reproduction of consolidated alliances. And from time to time it has been decided in the Department to support one group and then to support another" (Woman, DSRS Postdoc).

"I see the department as a set of different tribes, and if you don't belong to a tribe, you have almost no interaction with people in the Department. I've always had contacts with lecturers who don't really belong to the most powerful groups, let's say. […]. I believe that serious research is done on the basis of shared interests, not on the basis of what group you belong to, or whose power you represent. I've never liked this. I find it very short-sighted" (Man, DSRS postdoc).

Turning to the DISI, a first difference with respect to the DSRS is that the interviewees criticised not so much the selection procedures as the lack of funds to create more posts.

"The situation is the same as it is in all the rest of Italy: there's no money and there are no investments. It's not the criteria which are the problem. The problem is very simple: if you don't invest, you can put whatever criteria you want. It's a question of funds, not criteria. I can't complain because as metrics they're okay. It's that if the posts don't exist, they don't exist. It's very simple" (Man, DISI postdoc).

One issue that seemed to unite the two departments concerned the problems faced by those interviewees undertaking interdisciplinary research because of the difficulty of locating them in the department's areas of interest:

*"I was told outright that they didn't want to hire me on an open-ended contract both because there was no money and because I'm interdisciplinary. So they didn't want to hire me either at *** or at ***. Okay, I made this choice and now I have to lump it […]. In Italian academia there's this disciplinary closure – there are many reasons for it – but disciplinary closure is going on despite all the talk about interdisciplinarity" (Man, DISI postdoc).*

"I have a pretty interdisciplinary profile. But I see that it's not valued and recognized here. In fact, at times it seems that for this reason there are obstacles also for the scientific classification that I must have. I've perceived this obstacle only here, because in other places where I've been, it was appreciated" (Woman, DISI Postdoc).

Another element that emerged during the interviews with postdocs from both departments concerned recognition of work with students writing theses.

At DSRS it seems that men, more than women, sat on degree boards as a co-supervisors, so that their work with students became visible.

> *"I supervised three-year and master theses; one as first supervisor, and the other as co-supervisor. This was a formal role that was recognized by the administration and which I can put on my curriculum." (Man, DSRS postdoc)*

> *"Then there are the students writing theses that I supervise informally. I supervise only a few by choice because it's something that can't be recognized on my curriculum and remains invisible. It's something that I like very much, and I regret not being able to do more of it" (Woman, DSRS postdoc)*

At the DISI the situation was different. There the men especially emphasised the difficulty of not being able to appear formally as supervisors of doctoral theses:

> *"Also abroad, people and colleagues expect you to supervise doctoral theses. They expect things that I know how to do but which aren't formally recognized. I'm working informally with doctoral students, but according to the rules of the Doctoral School, it's not possible for me to be co-supervisor" (Man, postdoc DISI).*

The situation seemed to be different for the women postdocs at the DISI, who said that they were not formally recognized even for degree theses:

> *"I officially don't exist, and my work with students writing theses isn't recognized at all. I've never heard of postdocs being members of even undergraduate degree boards […]. I have a friend who graduated here. He was mainly supervised by a postdoc like me, but who was not on the degree board because the professor went instead" (Woman, DISI postdoc).*

Also as regards extra work related to administrative tasks, there was a substantial difference between the postdocs working in the two departments examined.

At the DISI, while there were significant gender differences among the movers/leavers, male and female postdocs said that they engaged to an equal extent in administrative tasks related to management of the projects on which they were working. At the DSRS, however, even among those still working in the department, administrative tasks seem to have been more often undertaken by women postdocs.

> *"What I've seen is that in my group everyone did everything, from the administrative part of the project to the actual research, from the writing of proposals to revision […]. There was always an equal distribution of tasks between men and women" (Woman, Postdoc DISI)*

> *"Well, perhaps the gender dimension emerges here somewhat: the administrative and organizational work was carried out within the group by ***, so the burden of collecting time-sheets, sending emails for seminars, and organizing a mailing list was all on the shoulders of a woman, and I was relieved. It's also true that it's now a man, a doctoral student, who does these things …" (Man, DSRS postdoc)*

More generally, in both departments the postdocs interviewed said that whatever the reference lecturer was unable to do, it was done by postdocs, from supervising theses to writing projects, which were then signed by the coordinator. The difference, however, consisted not so much in the type of activity as in whether or not it was formally

recognized. It is precisely this aspect that some interviewees emphasised, and it is interesting to consider the different perceptions in the two departments.

The DISI postdocs felt substantially satisfied with the responsibilities attributed to them and the recognition that went with it:

> *"For example, I'm now coordinating the writing of a European project which is mine: the networks are mine, the topic is mine; *** puts the signature. Here postdocs put their names on proposals. Of course, if you ask the administration office, they say: 'Well, the university would prefer the names not to appear'. But it's not that you can't put your name. It's not written anywhere" (Man, DISI postdoc)*

> *"I'm leader of a work package, and this is work with greater responsibility because I have to coordinate the activities of several people. I'm not just the postdoc who has to do her research and this is put in the deliverable X" (Woman, DISI postdoc).*

At the DSRS, however, the majority of the interviewees, both men and women, perceived themselves in a more invisible position not consistent with the responsibilities given to them:

> *"Also this thing of recognition in projects … for example, with a colleague I've written project proposals that have taken up a load of time and resources. But despite these efforts, our names can't appear on the proposals because we're not employees" (Woman, DSRS postdoc).*

> *"Often, the responsibility or the type of research you do is absolutely comparable to that of a researcher. It seems to me that the status of a postdoc can be defined as a non-status, that is, an expectation of being recognized as a researcher. I think that the stress is due to this as well. We're in a contractual situation which is weak in various respects but with the responsibilities of a researcher. The difficulties are there, the status and the condition of a postdoc is weak from this point of view, with the type of responsibility that you have to assume" (Man, DSRS postdoc).*

4.2.2. Gender differences and reconciliation between private life and work

The last two aspects to be emphasised concern answers to explicit questions put to the postdocs during the interviews on gender differences at the DISI and the DSRS, and issues related to interference between private life and work.

As regards the DISI, both men and women stated that they did not perceive differences in their overall treatment. However, especially the interviews with postdoc men evidenced the fact that the entry of women into computer science had been closely related to the opening of IT to 'softer' research topics.

> *"I think the arrival of *** has done good in this regard. He has a research topic more suited or more interesting to women, which is why he has girls in his group. In our group too there's now a topic *** and also there it's easier for girls. There are a great many geeks, men, in hardcore IT. Of course there are some exceptions, some female researchers who don't do social topics or *** but also do serious research" (Man, DISI postdoc)*

Therefore, despite the rhetoric of no difference between women and men in the department, some of the interviewees emphasised that the few women present at the DISI dealt with research topics not entirely to do with information engineering, but rather with softer and 'less serious' areas of the subject. There consequently persisted a sub-text whereby women are considered less suited to the scientific and technological disciplines.
At the DSRS the situation was different. There the women stressed that the gender dimension was of importance mainly in the definition of trajectories:

> *"I know stories of female colleagues here who have been pressurized because of a gender issue […]. You're female so I'll make you work more, I'll make you do administrative work. I won't let you get ahead because some day you may have children, or I may feel that you're less reliable and less strategic. In terms of attitudes, gender is still so important. If you asked me if things would be different if I were a male doing what I do, I'd answer definitely yes" (Woman, DSRS postdoc).*

> *"What I've seen is that the medium and long-term expectations of a woman with respect to a man – I refer to people aged between twenty-five and thirty-five – are usually framed by the possibility that a woman may have family responsibilities and therefore give less support to the group's work" (Man, DSRS postdoc).*

Focusing on the reconciliation of private life and work, especially the DSRS women highlighted the difficulty of finding a balance between the two spheres mainly due to the fact that, having no fixed schedules or obligations concerning presence in the office, they merged work with private life:

> *"The fact that I don't have an office and feel uncomfortable in my open-space is a problem, because when you work in an office you can unwind at home. But I mix work and everyday life. Maybe in the morning I start working, then turn on the washing machine, I start, I stop, hang out the washing … it's a constant mix of an everyday life which is never such and work that squeezes everything" (Woman, DSRS postdoc).*

The men were more often of the different opinion that the great flexibility in organizing their work was an absolute advantage for their private lives, which they could organize according to needs:

> *"I consider research work as very positive in some respects. It's obvious that on the one hand constant commitment is required of you, so you often have to sacrifice aspects of your private life. But the high flexibility of the working hours and non-obligatory presence in the office lets you organize things by yourself" (Man, DSRS postdoc).*

Also to be stressed is the aspect of the presence or absence of children. Only two of the DSRS postdocs interviewed had children. In both cases they were men, and both described problems in reconciling work and family life which had forced them to sacrifice time for the family in order to achieve professional goals. Among the other interviewees without children, the large majority, both men and women, described the difficulty of planning parenthood due to the impossibility of imagining a future family with an unstable job.

> *"Non-fatherhood which may not be necessarily a matter of choice is an aspect of a lack of reconciliation. It's clear that contractual instability, or at least a medium- or long-term prospect of it, has a negative effect on life projects like starting a family and having children" (Man, DSRS postdoc).*

> *"My work in academia is the obstacle to motherhood. The absence of a secure job prevents me from constructing a long-term project involving the care of a third person […]. This job requires me to be constantly updated on the international debate on my topic of interest, and the work interruption due the birth of a child would be an obstacle to my career development and being able to resume work one hundred percent" (Woman, DSRS postdoc).*

As regards the DISI interviewee, once again the majority had flexible workloads that usually depended on project deadlines. Both men and women said that they were able to strike a reasonable balance between private life and work:

> *"I arrive at around nine o'clock and leave at around six or six thirty, it depends. I don't usually work in the evenings because I want to keep the time for myself and have my own space. It's obvious that if there's something urgent that I haven't done during the day, I do it the evening. At the weekend it depends, because if there's something urgent, I do it, though I admit that I've eased off lately" (Man, DISI postdoc).*

> *"I try to organize my work so that I can take at least one day off a week. If I've got a great deal to do, I try to increase the hours of work. I may wake up at seven thirty and work till eight in the evening. I don't work at night. I haven't done so for a long time […]. Sometimes it seems to me that this work generally requires a commitment that not everybody would be willing to make. My friends often suggest doing something or other, but because I have a deadline, I have to say no" (Woman, DISI postdoc).*

To focus on the family dimension, the DISI men were of the same opinion as most of those at the DSRS. They said that, although they wanted to have children, starting a family was impeded by uncertainty about the future. Reconciliation, in fact, was the only issue in regard to which employment instability was cited at the DISI department. On the other hand, as already pointed out, almost all the women postdocs interviewed at the DISI said that they did not want to have children in the near future because motherhood could not be reconciled with research work:

> *"I don't want children, both because it's not my greatest desire and because I believe it would be difficult to work if I had a child, at least at first, because there are very difficult periods. I like working long hours for three weeks always eating out and everything, but how could I do that if I had a family? I don't think it would be at all compatible with the work that we do" (Woman, DISI postdoc).*

4.3. Expectations and future projects

As regards the future expectations of the postdocs interviewed, differences were apparent between the two departments.

Most of the men at the DISI did not see prospects of permanence in the department and they planned to go abroad, both because there were no vacancies at the DISI and because, according to some, the value of the work done by researchers is not recognized in Italy. The majority of the men interviewed said that they wanted to remain in academia and would like to continue working in the research sector. But one aspect that many stressed concerned the planning of a professional life compatible with that of the partner:

> *"I want to remain in the academic sector, but my main worry when I think of the future is what the Americans call the two bodies problem: I've had a relationship with a person for many years, and if I go somewhere, it'll have to be a place where there are opportunities for her as well, because otherwise it would be a dreadful wrench" (man, DISI postdoc).*

Most of the women, however, wanted to remain in Italy in the future and, if possible, at the DISI. Despite this desire, however, they knew that the opportunities were limited, and some of them had already applied for posts abroad.

> *"In the future I see myself doing research. I'd like to stay here, but I know that there are no chances, so I'm already looking around. I'm not ambitious and I want to keep doing exactly the things I'm doing now, in the place where I am now. At present, though, I don't have many projects for the future. I try not to think about it and continue like this, not having plans for the future and living in the present" (Woman, DISI postdoc).*

As regards the future, the interviewees at the DSRS were of the same opinion as those at the DISI. They wanted to continue working in Italy and, if possible, stay in the same department. However, they expressed uncertainty more forcefully:

> *"I see my professional future as rather gloomy. I've always said that I wouldn't want to go abroad because of family priorities that I must respect [...]. I'd like to be able to reconcile my affections and my roots with this mantra of international mobility, because if you want to be competitive, you have to go away. I have some family issues which at this time would make going away a bit problematic. Then I resent the fact that I must place my whole life in service to my professional development, because I don't want to uproot myself" (Woman, DSRS postdoc).*

Some of the other women interviewed, however, had less clear ideas about their professional futures and were not sure if they would continue in research, both because they were uncertain if they would be able to remain in the academic system, which is highly competitive, and because they were unwilling to devote their personal lives wholly to research. Nor did the majority of the men have clear ideas about the future: they were unable to envisage one extending beyond a time horizon of a few months. Many claimed that early career researchers people have few opportunities at the Italian universities, and that academic work offers scant chances of permanent employment, implying many years of precariousness:

> *"I can't plan a future extending beyond a year, and this is perhaps one of the main problems. I know what I wouldn't mind doing, which is continuing in research. Continue at the university? If possible, yes, but frankly I don't see it as the only option. What I like is dealing with issues that I consider useful. Basically, I think we can perform a function for the public good, and if this is*

possible outside the university, I wouldn't mind taking that road" (Man, DSRS postdoc).

4.4. The 'best' trajectory for career development

The factors considered most important by the postdoc interviewees in building an academic career were membership of a research group, publications, geographical mobility, and fundraising.

As regards membership and the capacity to activate networks, the majority of the interviewees said that this factor was central for making themselves visible in their department. Conversely, even those who had achieved significant international recognition said that if they were not supported by a person or a research group within the department, they had no chance of obtaining a tenured position.

Another element which should ensure a good scientific profile consisted in international-level publications. These should provide the basis for significant professional development. The possibility of having a large number of international publications was also favoured by geographical mobility, which was considered another factor important for professional development. This is because the internationalization of experience and opportunities to work in other organizational and academic contexts allows the construction of a solid network within one's area of research. International collaborations are of great importance because they certify that the value of an individual's research and his/her approach are recognized not just by one lecturer, research group or department, but by an entire scientific community.

The last factor considered essential by the postdocs interviewed was the ability to attract funds from outside. This ability was seen as highly positive because, at a time of increasing cutbacks in research, obtaining a project – whether national, European or international – or funding from private companies creates new opportunities to continue one's professional career.

To summarize, the interviewees described a very specific profile guaranteeing the 'best' trajectory: on obtaining a postdoc post, it is important to learn how to write projects, preferably European or international, to have individual or co-authored papers published in prestigious journals, and in the meantime to spend some periods abroad. Also important are teaching experience, which is considered very important in selection procedures for assistant professorships, and the bargaining power of the research group to which one belongs.

5. THE NEWLY EMPLOYED ASSISTANT PROFESSORS

Fixed-term researchers are hybrid figures in the Italian academic system. In fact, as reported in previous studies produced as part of the GARCIA Project (Peroni et al. 2015), the 'RTD-a' assistant professors analysed here do not have a tenure track, but a temporary professorship which lasts for three years and is renewable for only two further years after an internal evaluation.[1]

1 The RTD-a position is different from the temporary assistant professorship of "type B" (RTD-b), which is a three-year post, not renewable, but on the tenure track. However, access to a permanent position is conditional on possession of the National Scientific Habilitation,

Although the newly-employed assistant professors interviewed were not on a tenure track, they did not seem particularly concerned about the possible loss of their jobs, albeit with some significant differences between the DISI and DSRS. In fact, while at the DISI the newly-tenured researchers labelled themselves – as far as contractual status was concerned – 'semi-structured' (i.e. with structured but not tenured positions) and therefore had good bargaining power (though not comparable with that of the confirmed professors), those at the DSRS had quite the opposite perception of their position. The principle in that department was that people with fixed-term contracts were marginal to decision-making at the institutional level.

The different positions of the DISI and DSRS interviewees permeated all the areas examined in the analysis of the interviews with the RTD-a assistant professors. Another substantial difference revealed by analysis of the interviews was between the accounts of men and women concerning perceptions of their everyday work. In many respects, in fact, men and women RTDs expressed divergent points of view on both their recognition within the department and difficulties in their career pathways.

5.1. Previous academic experience

The interviews conducted at the DSRS and the DISI revealed similarities in previous career paths. Almost all of the interviews showed that obtaining a post as a fixed-term researcher was related, to a greater or lesser extent, to networks and experiences constructed during academic life in the department in which the post as researcher had been obtained.

The interviewees at both the DSRS and the DISI emphasised that their career paths had been to some extent linear. After the doctorate, awarded at the University of Trento but often also at other universities, they had spent periods abroad, and then returned to Italy to take up another postdoc post or participate directly in an RTD competition. It emerged from the interviews, as also recounted by the postdocs, that consolidated relations with figures prestigious from both the negotiate point of view and within the scientific community were considered important in the recruitment process. The fact that the evaluator already knew the candidate's work was a factor that could help him/her to be selected for an assistant professorship.

> *"Certainly important for winning [the RTD competition] was the entire network of people that I knew. I'd already worked here, even though I then moved abroad. I knew some of the professors, and this helped me in being hired because they already knew how I worked. Let's say I was 'supported' in a certain way" (Woman, DSRS RTD).*

> *"At the end of the day, it's obvious that if I hadn't been known to someone – though nobody formally asked me to join a group – I probably wouldn't be here" (Man, DSRS RTD).*

Also the DISI interviewees maintained that prior collaborations are crucial for obtaining support in recruitment procedures:

> *"I was lucky to be part of a group and to receive support from lecturers who believed in me. […] Also when the RTD competition was held, I found people*

obtainable after a very long, complex and debatable procedure managed at the national level.

who believed in me, because without them you can't get ahead at a university in Italy, not even if you're a genius" (Man, DISI RTD).

5.2. The current position and the main difficulties encountered

It emerged from the interviews conducted at the DSRS and the DISI that the respondents, despite the above-described differences between the two departments, were largely satisfied with their current jobs, which put them on a path that opened a possibility of tenure, although not guaranteeing it. In particular, those who had already obtained the national qualification as associate professors described it as a 'springboard' to tenure.

5.2.1. Participation in departmental life

Both at the DSRS and the DISI, the researchers' main activities were research, teaching, and the supervision of students writing theses (also doctoral students at the DISI). Added to these activities – considered canonical – were further ones delegated by the department director, the head of the degree course in which the interviewee taught, or relating to research projects on which s/he was working.

As described for the postdocs, also in the case of the RTDs we found gender differences in the distribution of work, particularly as regards administrative tasks. In fact, these tasks – for example, those relating to project management – seemed to be assigned to women. The men interviewed at the DSRS instead said that such tasks were not important in their everyday activities.

"I've done practically everything in this project. Everything at the level of the empirical research, but also report writing, fund management, administration, and relations with the partners" (Woman, DSRS RTD)

At the DISI, the administrative workload was instead delegated to administrative staff specifically hired for the various research projects. This was made possible by the large amount of external funds – from national, European and international sources as well as the private sector – which financed the research conducted at that department.

"To manage so many people as we do is an activity necessary to support researchers. We have – paid by us – a full-time and a part-time secretary dedicated to the administration" (man, DISI RTD).

In regard to the difficulties faced by the RTDs at the DISI and the DSRS, the first concerned professional recognition of the activities carried out within the department, in particular as regards the writing of projects. However, this issue seemed to be regulated differently in the two departments.

"I've been both the overall head of projects and only the scientific coordinator, and these roles were formally recognized … there are contracts on which my name appears as project leader" (Man, DISI RTD)

"The most grotesque thing that happened to me on a PRIN [ministerial project] a couple of years ago was that as a fixed-term researcher I was not formally eligible to be head of a local unit: I found myself doing all the work

> *but having to ask a colleague, who did it for me as a favour, to figure as head of the unit" (Man, DSRS RTD).*

Interpreting these differences between the two departments requires a brief digression on the regulation of the Italian academic system. At ministerial level, the figure of the RTD does not fulfil the eligibility requirements to appear as a project manager. The Ministry, in fact, does not contemplate RTDs among those who can occupy coordination roles, which are accessible only to those with permanent posts. This rule does not apply to projects financed by private companies or by the European Commission. These are more frequently present as financiers at the DISI compared with the DSRS, where instead funds more often come from local or national public authorities. This largely explains the differences between the two departments in the possibility to coordinate research projects.

A second feature, once again linked to the recognition of roles, concerns the participation of RTDs in decision-making. Also in this case there were differences between the two departments. At the DISI, the RTDs interviewees stated that – although the most important decisions were obviously taken by the full professors – everyone could submit their ideas and proposals for innovation to the department council, and they were often supported. At the DSRS, both women and men thought that they were not fully involved in departmental life.

> *"I and *** tried to put this matter as one of the central issues concerning the department […]. I must say that they didn't say to me: 'But you, RTD, what you want and where do you think you're going?'. Considering that neither I nor *** are full professors, I must say that there were some things that we were able to carry forward in the department. There was a bit of space, and we were given trust" (Man, RTD DISI).*

> *"I've participated in [the department council] … When there's a faculty conference, where they talk for three hours about generic lines of development, we're also invited. In situations where it is decided what the strategy will be and what to invest in, we're not invited […]. If you look from an institutional point of view at how we RTDs are informed and how we participate in decisions … the level is zero" (Man DSRS RTD).*

Another aspect to consider with regard to the distinction between the DISI and the DSRS is the difficulty of obtaining recognition for the work done with students writing theses. Although at both the DISI and the DSRS, RTDs may not appear as thesis supervisors if they do not have their own students' class, at the DISI there is nevertheless a mechanism that allows the formal recognition of supervision:

> *"I can be the supervisor, but usually in the group, because we are linked together for now, but maybe that's because these are my first years, so I prefer to have him in the loop as well, so we do it together. Now, for example, it is written that there's one advisor and I am a co-advisor" (Woman, RTD DISI)*

One notes from the above interview excerpt that it is possible to supervise students despite not having a teaching responsibility. At the DISI, besides the supervisor there is the figure of the co-supervisor, together with two advisors, who have the task of discussing the student's thesis, but without having supervised the research and the writing. The situation is different at the DSRS where, besides the impossibility of RTDs

being recognized as co-supervisor, there appears to be an unequal distribution of tasks related to degree theses among the various members of the department:

> *"I assist students in writing their theses. It's an activity that so far has not been formally recognized, in the sense that there is no formalization, and it's not that the more theses you supervise, the better. There's a very uneven distribution of tasks from this point of view, and there is no advantage in doing numerous theses: it takes up a lot of time, and there's no recognition of this work" (Woman, DSRS RTD)*

This interviewee's opinion was repeated by her male colleagues. They too emphasised an unequal distribution of thesis writers. It was disproportionate not so much by gender as by academic position. In fact, the interviewees raised the problem of the refusal by some professors to assist students in the writing of their theses, especially if they were undergraduates.

5.2.2. The reconciliation of private life and work

A second area of difficulties for the RTDs concerned care responsibilities, and in particular having children.

The rhetorics of the men and women were similar with reference to the reconciliation of research with family life, described as an obstacle to the development of an academic career, to which the interviewees felt that they had to give priority at this stage of their lives. On the one hand, for men this meant their reduced presence in the family and a greater amount of care work for their partners/wives:

> *"What is valued in research and academia is also a certain continuity, especially in terms of publications. Mine have diminished somewhat because with the family … of course, everyone's sorry that I don't have time to devote to my child, to my wife, or to go around" (Man, DISI RTD).*

On the other hand, for women – almost absent from the tenured research staff at the DISI – who wanted to have children, there was a postponement of motherhood due to concerns about the disruption of work that this would cause, especially in regard to publishing – considered a factor crucial for career development and apparently impossible to interrupt:

> *"To have a relaxed mind, I'll wait for a baby until I qualify as an associate professor. And then I'd like to have a baby, so we'll see. This is the idea, because I don't want the baby to arrive in a very stressful period" (Woman, DISI RTD).*

Also at the DSRS, motherhood was perceived as a problematic event, and the very few women with children stressed the difficulties that they had experienced:

> *"In Italy, motherhood is seen as an obstacle to research. If you did a survey on the women in the department, you'd find that very few have children. […] But when I was in *** [other EU country], when I told them that I was pregnant and after six months I wouldn't be able to work, they told me not to worry, that it was a private matter" (Woman, DSRS RTD).*

Maternity therefore still does not find citizenship in Italian academia, and the female researchers with children – none at the DISI and one at the DSRS – encountered considerable difficulties in reconciling work and family life. Although to a lesser extent, also the male RTDs with children – three at the DISI and one at the DSRS – considered it difficult to achieve a balance between work and family life:

> *"In the family, the burden of looking after the children is, of course, asymmetrical and it mostly falls on my wife. I'd say that I mostly take them to school in the morning, and when I can, I go and fetch them in the afternoon […] But just about everything to do with feeding the children and caring for them is her responsibility" [Man, DISI RTD]*

> *"Having small children cancels your free time […] It's a matter of balance between family life and work. Often my work time coincides with my free time in that I can have lunch and dinner with colleagues, or I attend conferences that allow me to be away from home and have some space of my own external to family life "(Man, DSRS RTD).*

On the one hand, the above excerpts evidence that also men have no time for themselves if they have children. On the other, development of an academic career still seems linked to a gender model that allows men to devote themselves more to their careers than their partners/wives are able to do.

Entirely different was the view of RTDs without children. In fact, the male interviewees saw a permeability between the familial and professional spheres:

> *"I've never seen my private life as distinct from my scientific and intellectual life […]. My whole life is my research. Maybe it's also related to my situation, because being single and childless I'm not subject to the constraints of private and family life. But even if I had a private and family life, I probably wouldn't be able to distinguish among my research, my interest, and my passion" (Man, DSRS RTD).*

This interviewee's words highlight how the professional and personal spheres are perceived as inseparable, it being almost impossible to draw boundaries that delimit them.

5.3. Expectations and future projects

The interviews revealed a substantial similarity between the future expectations of the RTDs at the DISI and the DSRS. Most of them, both women and men, intended to achieve a stable position and then advance their academic careers within the department to which they belonged:

> *"For example, becoming an associate professor or becoming a full professor, I don't want to wait too many years for that. So, my idea is to fulfil all the requirements to apply for this position soon […]. I know what I should do for that, so that's why I've devoted most of my time to here" (woman, DISI RTD).*

Some DISI interviewees, however, did not preclude routes alternative to academia, particularly ones related to universities outside Italy (routes, however, which were not found in the DSRS interviews) if they did not obtain satisfactory positions.

An issue worth emphasising, and which emerged in almost every interview, concerned the temporary nature of the employment contract, which significantly affected expectations even outside the professional sphere, for both the DISI and the DSRS interviewees. An oft-cited problem was, for example, the difficulty of buying a house or obtaining a mortgage. Furthermore, as already pointed out, some of the respondents were not yet ready to start a family because this might hamper their professional development by limiting periods spent abroad – which were considered important in fulfilling the requirements for professional advancement.

The specific theme of the temporariness of the contract and the influence that it might have on expectations about the future was dealt with in similar terms by the RTDs at the DISI and the DSRS, both women and men:

> *"In February next year my fixed-term contract will expire, but fortunately I'm in a selection procedure: an associate professor position has become vacant in my department, and I hope that everything will go well" (Man, DISI RTD).*

> *"I'm an optimist and I hope that after this stage there'll be stabilization, either through an RTD-b or through another type of mechanism, but I hope to continue and become a professor" (Woman, DSRS RTD).*

As noted above, therefore, the RTDs interviewed did not view the expiry of their contracts as particularly problematic, and they were quite optimistic about being able to obtain a more stable position in the future.

5.4. The 'best' trajectory for career development

The interviews with the male and female researchers with fixed-term contracts at the DISI and the DSRS evidenced a well-defined profile of the trajectories and experiences that can be considered 'best' for career development.

The first phase assuming considerable importance coincided with the period of the doctorate. During those years, a person should begin to have their work appreciated first in their research group and, later, in other research groups within the department. Already during this phase, it is important to spend some time abroad, in order to expand one's network and become known to the wider scientific community in one's disciplinary field. Another element considered essential, already at this early career stage, is publishing, especially in prestigious international journals. Furthermore, a valued feature giving good future prospects is pro-activeness in developing 'other' initiatives within the department that extend beyond routine activities and demonstrate a team spirit. It is also necessary to find the right mix between being a good researcher and a good teacher – another element considered particularly important. A further factor in development of a 'winning' career is the support of one's supervisor. Through the support of a senior researcher, especially if s/he has prestige and negotiating capacity within the department, an early career researcher is more likely to achieve a stable position at the University of Trento or at another university.

As regards the research interests of the future RTD, these should be as specific as possible. Although interdisciplinarity is regarded as an added value because it leads to broader approaches to certain phenomena, it is considered more strategic to focus on only one disciplinary sector. This is for two reasons: first because a multiplicity of thematic interests makes it difficult to fit into a particular competition sector; second

because a fragmentation of career and research interests gives the impression of not being an expert in any particular field.

We may therefore summarize by saying that the experiences enabling candidates to win RTD competitions began with the doctorate – which was when the RTD began to create his/her own network. A high degree of internationalization, gained mainly through experiences such as visiting scholarships abroad and participation in research projects of international importance, also appears to be particularly valuable. In this regard, some interviewees said that the award of a project of European or international significance was one of the elements that favour selection as an RTD and tend to provide job security. Finally, we turn to the moment of the competition. Besides having a strong curriculum in terms of research, publications and teaching, an element influential for the candidate's possible recruitment is, as already mentioned, the fact that his/her work is already known to the department, especially in terms of previous research assistantships.

Because the activities to be carried out, even if informally, so as to become an RTD are varied and require almost total dedication to work, the typical profile of an RTD seems to be that of a person with no family – or with limited care responsibilities – who devotes much of his/her time to work. This is especially linked to the frequency of publications, on which a great deal of emphasis is placed, and which is the basis on which to build a profile suitable for development of the academic career. Publications, in fact, are of central importance for recognition at both the departmental level and internationally, and hence for having a 'winning' professional trajectory.

6. TRANSVERSAL DISCUSSION

A matter widely investigated in the literature is why universities are male-dominated and hierarchical organizations (Saunderson, 2002) in which "gender inequalities appear to be global and persistent phenomena" (Husu, 2001: 172). The results of the GARCIA Project confirm this scenario characterized by the low presence of women, especially in the topmost levels of the scientific career. This situation is often described with the metaphor of the 'glass ceiling' (Hymowitz, Schellhardt, 1986), which is also well suited to the contexts analysed here. As in other professional contexts, so in academia women tend to be held down on a 'sticky floor' (Booth et al., 2003) which retains them, in greater numbers than men, at the lowest levels of the career. And it is on the early stages of the academic career that the GARCIA Project focuses.

This section of the report concentrates on crosswise analysis of the stories recounted by the three groups of respondents: the movers/leavers, the postdocs, and the assistant professors. The purpose is to understand how the 'leaky pipeline' phenomenon (Alper, 1993) operated in the two departments analysed. In the narratives of the interviewees, gender inequalities were cited sometimes overtly and sometimes more covertly. In any case, as we shall see, there exist diverse and complex social dynamics whereby women encounter more obstacles than men during their academic careers.

6.1. Gender cultures and organizational cultures

In this cross-sectional analysis of the empirical materials collected, we try to identify the elements making up the gender cultures conveyed in the two departments studied.

To start with the DISI, most of the interviewees, both men and women, said that they did not perceive gender differences in the department where they worked; indeed, they described equal working conditions and opportunities for career development. However, there were some interesting differences both between men and women, and within the three groups analysed.

The male assistant professors at the Computer Science department adopted a rhetoric that declared equality between the sexes; but it emerged from their narratives that women colleagues were considered suitable for the 'softer' part of their discipline (Kantola, 2008). This rhetoric reproduced a gender culture founded on the traditional division of labour whereby women are regarded as more suited to the 'soft' sciences than to 'hard' research, and which is typical of male attitudes. This view reproduces gender stereotypes which result in an unequal distribution of power between the sexes (Ernest, 2003).

Also the women assistant professors at the DISI claimed that they did not perceive a gender difference in their treatment with respect to men, and they tended to assume the 'malestream' point of view (Moller Okin, 1989) on their community of reference. This attitude was described by Gherardi and Poggio (2003), who observed the cases of women who enter traditionally male organizations and professional contexts and deploy various strategies to deal with their position, including complying with the majority male social group. Kanter (1977) had already emphasised this trend, noting that when women are in the minority in masculine cultures and want to avoid isolation, they often seek to become members of the 'dominant group'. The discursive practices of non-gender discrimination in academia, in disciplines that have always been male-dominated, can therefore also be read in light of the willingness of women to be considered and evaluated in the same way as men. The female assistant professors, in fact, rejected the narrative of diversity – though this was supported by their male colleagues – showing that they felt at ease with the conditions dictated by academia, which requires total dedication to work (Krais, 2008). However, constant availability for research and keeping abreast of the competition subtended an organization in fact male-oriented (Gill, 2009). It was based on a traditional gender model, the differentiation of roles, and an organizational culture unconcerned by the fact that researchers have a life outside work.

The fact that the all-encompassing nature of academia was not particularly problematized in the interviews – either by men or women – was certainly linked to a large extent to what Kvade (2011) says in reference to the ambivalence of knowledge work, considered "both seductive and greedy at the same time" (2011: 17). However, total availability for work has to do not only with the passion for research and the high level of identification with one's job, but also with rhythms that impede investment in other areas of life, in particular care tasks (Gaio Santos, Cabral-Cardoso, 2008). In this regard it is interesting to note that, in terms of reconciliation, the women assistant professors at the DISI, as well as the female postdocs, said that they did not want – at least at the time of the interview – to start a family, which they perceived as an obstacle to development of an academic career. The problem therefore consisted, not in the legitimate desire not to have children, but in the fact that this was perceived as incompatible with professional investment in university work. Moreover, as argued by

Armenti (2004: 75), "the first message that female assistant professors receive from the past is that taking time off from work for childcare can be harmful to their career progression". And this is all the more true when the assistant professorship is temporary and does not carry tenure (Nikunen, 2011). In these cases, women – those who want to have children – adopt the strategy of postponing pregnancy until they have achieved professional stabilization (Clegg, 2008).

The view of the university as incompatible with starting a family reflected adherence to an organizational culture – reproduced by both the men and women interviewees – which did not allow any slackening of performance, thus reducing life-spaces outside work to the minimum. Consequently, those with care responsibilities were penalized in particular as regards maternity, which was represented by the female assistant professors and postdocs at the DISI as too long a period of time to interrupt the academic pathway (Probert, 2005). It emerged from the interviews that motherhood was considered an obstacle to career development – a 'spectre' that seemed to loom over the career prospects of women – while the male counterpart, fatherhood, was perceived as less problematic, especially in cases where care work was the responsibility of women (Gherardi, Poggio, 2003).

Finally, as regards the DISI, whilst the assistant professors interviewed, both men and women, as well as male postdocs, claimed not to perceive differences between the sexes in the department, the female postdocs instead described 'hidden' situations of discrimination (Husu, 2001) which they alleged they had suffered at the hands of male colleagues. In this case the issue was not reconciliation, but legitimacy within the research group. In fact, several women said that they did not perceive an equal scientific legitimacy, especially because their positions and research proposals often seemed to need the support of a male colleague to be given full consideration. This situation perpetuated a professional culture that still regards the technological and scientific disciplines as not suitable for women, who are labelled "strangers in a foreign land" (Gherardi, 1991).

Turning to the DSRS, analysis of the stories revealed positions different from those at the DISI. To be emphasised in particular is the presence of concern about work instability which resulted in a sense of frustration that permeated both the present and the future, not only in the professional sphere but also in the private and familial one, thus influencing the decision concerning possible future parenthood.

As far as gender discrimination is concerned, at the DSRS there were interesting differences in the representations of men and women, as well as in the opinions of those occupying different positions (assistant professors, movers/leavers, postdocs). Whilst as regards women, the female component was explicitly cited as most penalized in all three of the figures analysed, this was not the case among the men interviewed. In fact, the narratives on gender inequalities within the department were mentioned and shared by both the movers/leavers and the male assistant professors, but not by a substantial number of male postdocs.

One of the main discursive practices deployed by the women interviewees to account for gender asymmetries was the prevalence of male figures at the apex of the academic career. To be noted is that – at the time of the research – there was only one woman full professor within the department (who recently became two). According to the interviewees, this made it more difficult for women to create networks. As widely shown in the literature (e.g. Knights, Richards, 2003; Benschop, Brouns, 2003), academic

institutions are traditionally considered social spaces in which a dominant male culture is still very apparent. In this scenario there are two types of successful scholar: the one willing to devote him/herself to research – which in turn erodes all other areas of life, as mentioned above – and the one who negotiates, in informal (male) networks, academic positions and power management. Women are unlikely to match either profile: on the one hand, because there is still a marked gender imbalance in care loads (Gaio Santos, Cabral-Cardoso, 2008); on the other, because women are excluded from the so-called 'old boys network' in which the main decisions on selection processes are taken (Van den Brink, Benschop, 2012).

As for the reconciliation of work and family life, as already emphasised at the DISI, so at the DSRS the situation was very problematic, as also highlighted by the fact that there were no female postdocs at the time when the interviews were conducted.

There was a wide variety of positions among the women postdocs, as already observed at the DISI. Some did not want to have children; others delayed the decision because of job instability and/or the heavy workload characterizing this stage of the career. In particular, it was believed that motherhood impeded professional ascent, particularly in regard to publishing, which is deemed essential for academic development (Lynch, Ivancheva, 2015). Once again, therefore, there was a narrative based on the irreconcilability between the family sphere and the work required by contemporary academia, which has expectations concerning performance by researchers that only those devoted solely to their work can fulfil (Armenti, 2004).

Also among the male postdocs, employment instability was cited as the main obstacle to starting a family. Their (non) choice of non-fatherhood was therefore influenced by the precariousness of the university sector and which affected both professional decisions and – above all – familial ones (Wöhrer, 2014).

Although concern about job security permeated all the interviews at the DSRS, it does not seem to have had a significant impact on the experiences of male assistant professors, who being confident about a future permanent position, saw fatherhood as compatible with their careers. The dual role of academic and mother was instead exposed to various types of work-family conflict (O'Laughlin, Bischoff, 2005), and in particular to a time-based one due to the pressure to devote seven days a week to one's job as a research worker, from writing projects to teaching and research.

6.2. Network construction and the (de)valuing of work

The topics of building a strong academic network and recruitment processes were among those most discussed by the interviewees – both men and women, and postdocs, leavers/movers and assistant professors.

The majority of the stories collected, at the DISI as well as the DSRS, albeit with some differences, stressed the importance of establishing a strong network within the department in which it was hoped to obtain a post, and more generally within the scientific community. Abilities and awards remaining equal, in fact, those more integrated into the research community, those who have the right knowledge and relations both formal and informal, are more visible to the decision-makers in selection procedures for postdocs and assistant professors. Upward mobility in academia is often a 'sponsored mobility' (Kanter, 1977) in which the mentor's role is crucial.

In the interviews analysed, the women seemed to find it more difficult to construct networks and collaborate with other members of the research group to which they belonged. At both the DISI and the DSRS, and in all three groups of respondents, the women more often than the men emphasised a lack of cooperation. As pointed out elsewhere (Kantola, 2008), the lack of cooperation experienced by women can signal a form of subtle discrimination which may fuel dynamics of marginalization. Not feeling integrated into a research group, the women experience a kind of isolation that puts them at a disadvantage. The lack of cooperation among the members of the research team may also create further difficulty in understanding the informal rules of the game that one must know to progress in a scientific career.

Finally, a further issue in regard to which significant gender differences were described, albeit with different positions in the departments studied, was invisible and unvalued work. To analyse this phenomenon, it is fruitful to draw on the work of Acker (1990), resumed by Husu (2001) and later by Kantola (2008), to describe the process by which gender differences are consistently reproduced in academia. Four main dimensions are distinguished: (i) the gender-based division of labour; (ii) gender interactions; (iii) gender symbols and (iv) the gendered interpretation of a person's position within the organization. If one analyses the first dimension, one finds a gender-based division of labour which assigns less valued activities of little scientific impact especially to women.

The assignment of administrative and organizational tasks predominantly to women (Bagilhole, White, 2003) on the one hand tends to perpetuate the traditional idea that some activities are more 'suitable' for women than men, conveying gender stereotypes which label certain roles as female (Park, 1996); on the other, it generates a hidden discrimination whereby women's careers develop more slowly than those of men because of the time taken away from their research (Husu, 2001). Moreover, in both departments analysed, especially among postdocs, there was a widespread perception that women were entrusted with tasks requiring a lower level of responsibility with respect to men, who instead were given tasks more valued and visible within the department. Such situations, already analysed in other academic settings (Moss-Racusin, 2012), reproduce the stereotype that women are less suited to work carrying responsibilities than are their male colleagues. The allocation of prestigious activities to men and less recognized ones to women is the basis of what has been termed the 'Matthew effect' (Merton, 1968). This expression derives from the Gospel according to Matthew, where it is stated: "For unto every one that hath shall be given, and he shall have abundance: but from him that hath not shall be taken even that which he hath". This principle manifests itself in a kind of cumulative process which rewards those who are already in advantageous or prestigious positions. The other side of the coin, namely the invisible work done by women, is termed – to emphasise how this discrimination is based on gender – the 'Matilda effect' (Rossiter, 1993). This was particularly evident in the planning work of the women interviewed, which, unlike that of men, was often undervalued and not formally recognized. At issue, therefore, is not only the type of work done but also how much it is valued according to whether it is performed by a man or a woman (Bourdieu, 1998).

In conclusion, therefore, we may say that the stories recounted by the women and men at the two departments differed from each other, and so did the stories of the three groups analysed: movers/leavers; postdocs; assistant professors. However, a linking theme in all the narratives was the increasing difficulty with which academics reconcile their private and family lives with their work. Changes in the university system, in fact,

have led to increasingly exclusive investment in the career. It is therefore not surprising that this organizational model gives rise to disinvestment by researchers, and particularly women, in the family sphere, since pursuing an academic career advancement proves impracticable if one tries to reject the 'long hours culture' characterizing the current university system.

7. CONCLUSIONS AND RECOMMENDATIONS

In the first Garcia report on the leaky pipeline phenomenon (D6.1), we showed that, from a quantitative point of view, it is rather difficult to obtain a systematic picture of the career trajectories and gender inequalities that characterise the early stages of scientific careers in Italy. The available data are often limited and incomplete. They focus mainly (or exclusively) on employment conditions and/or on specific cohorts of graduation, or institutions, or scientific disciplines; and they do not allow the monitoring of career trajectories over time. In most cases, it is possible to describe changes in the structure and some career transitions only within the academic system. However, a systematic review of the available data and quantitative researches makes it possible to outline a descriptive framework of the main dynamics that currently characterise scientific careers, as well as some of the disadvantages faced by women and early-stage researchers in their career development in Italy.

Alongside critical reconstruction of the main analyses and quantitative research on the academic careers available in Italy, the GARCIA Project has conducted qualitative analysis in order to propose interpretations of the leaky pipeline phenomenon based on the experiences of the early-career researchers who had worked or were still working at the two departments studied. The intent was to gain detailed understanding of both the events in the academic pathway that may induce abandonment of research and the dynamics relative to everyday work and gender cultures in the organizations analysed, namely a STEM and an SSH department . In this regard, it is interesting to note that both at the DISI and at the DSRS, the three groups of interviewees – leavers/movers, postdocs, assistant professors – men and women, mentioned similar problematic factors and singled out similar elements as those in which to invest since the beginning of the doctorate. The differences were found not so much in the factors described as problematic or advantageous, but rather in the different experiences of the interviewees in academia.

The various studies based on quantitative data evidence the persistence and reproduction of gender asymmetries already at the early stages of the career after PhD graduation. The leaky pipeline, glass ceiling and sticky floor emerge as interrelated phenomena both at national and local level. Despite the general growth of their educational endowment and their considerable involvement in PhD programmes, women continue to suffer from disadvantages in regard to employment in the academic and scientific sectors, performance of research and development activities (in their jobs) (Istat, 2010, 2015), and career advancement. And they continue to be strongly underrepresented among the top positions in the academic hierarchy (Table 1) (*vertical segregation/glass ceiling*). Data confirm that women employed in the Italian academic system take more time than men to enter tenured positions (Schizzerotto, 2006; Istat, 2010; Toscano et al., 2014) (*sticky floor)*. This dynamics seems almost stable over time – for the transition to both associate professorships and full professorships (Frattini and

Rossi, 2012) – and across fields of study (Lissoni et al., 2011; Corsi, 2014, Palomba, 2000; Menniti and Cappellaro, 2000; Badaloni et al., 2011).

Women with children are less often involved in research activities (Corsi, 2014; Istat, 2015). Parenthood, and more precisely motherhood, continue to be considered incompatible both with a successful (early) career development in the academic sector, and with the job instability that characterise the early stages of career within and outside the academic system. However, there is no evidence that not having children produces positive effects in climbing the career ladder (Palomba, 2008). Childlessness is quite common among early career researchers in Italy. As explained in the methodological paragraph, among early career researchers still working in the Italian departments involved in the Garcia Project, we were not able to interview female postdocs with children (Tab. 3).

Research and analyses focused on gender gaps in various selection processes within the Italian academic system highlight the persistence of a set of mechanisms that seem to feed women's disadvantages in their career developments. These mechanisms interfere with the accumulation of the various requisites needed to build a successful academic career: international publications, fundraising; be included in international and local research networks; visibility of own research within the research community and within the department. Firstly, comparative analyses based on quantitative indicators document that Italian female researchers continue to suffer from a certain productivity gap and are less competitive than men, facing *ceteris paribus* more difficulties than men in publishing (D'Amico et al., 2011; Lissoni et al., 2011; Baccini et al., 2014; Corsi and Zacchia, 2014). Secondly, several analyses focused on selection processes within the academic system have pointed out the persistence of higher risk aversion among women in regard to competitions crucial for their career development, such as the National Scientific Habilitation (De Paola et al., 2014; Baccini and Rosselli, 2014; Pautasso, 2015), or applications to obtain European research funding (EU, 2013). Thirdly, a study focused on female economists has found that, although the investment of women in the profession (in terms of education, organizational activities and research) is significant, equivalent to, if not higher than that of men, women face more difficulties in career advancement, especially when cooptation is at work. In line with the transversal analyses proposed in this chapter, women do research, but they are less visible, often employed in less prestigious tasks and with low level of responsibilities, and less involved in professional networking (Corsi, 2014).

Focusing on the leaky pipeline and the mechanisms that foster the exclusion of early career researchers from academic and scientific careers, almost all the researches conducted on this topic in Italy showed that job insecurity is the most important barrier to the pursuit of a research career (Ajello et al., 2008; MORE2, 2013; Toscano et al., 2015). The high level of job uncertainty experienced by postdocs produces negative consequences on researchers' ability to manage their present and future work, their chances of meeting the expected research performance targets, compromising their long-term career development and reducing their level of satisfaction with their jobs.

In line with such results, the findings of descriptive analysis conducted on the data collected through the Garcia web-survey (Bozzon and Gurnet 2015) showed that the decision to leave the scientific career is strictly connected to the lack of clear long-term prospects, as well as to the lack of job opportunities in the (Italian) academia. The early

career researchers at the DISI and DSRS were highly dissatisfied with the level of security and the chances of career advancement related to their jobs (Figure 2).

However, the interviews conducted at UNITN pointed out two interesting dynamics, the first related to the research field, the second to the job position of assistant professors. Firstly, all issues related to contractual instability seem to affect more the postdocs at the DSRS than those at the DISI. Such difference is mainly due to the wider range of research chances outside the academic system available in the field of computer science and to the higher confidence of those specialized in this filed in having access to new research funds in the future.

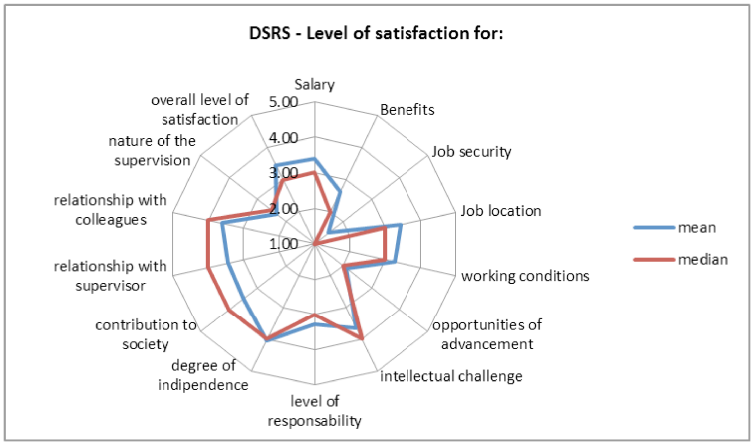
Secondly, the group of **fixed-term assistant professors** (in both departments) do not see the expiring of their contract as problematic. This group perceive themselves as part of the university community and assume that, given their current position and the internal recruitment/career advancement rules at the UNITN (Rapetti et al., 2015), they have high chances to obtain a permanent position in the short run within the department where they are working in. At the same time, female assistant professors showed a higher level of dissatisfaction and intolerance with the "long hours culture" characterising the current university system and with the difficulty to reconcile their private and family lives with their work when compared with their male colleagues and with (fe)male postdocs.

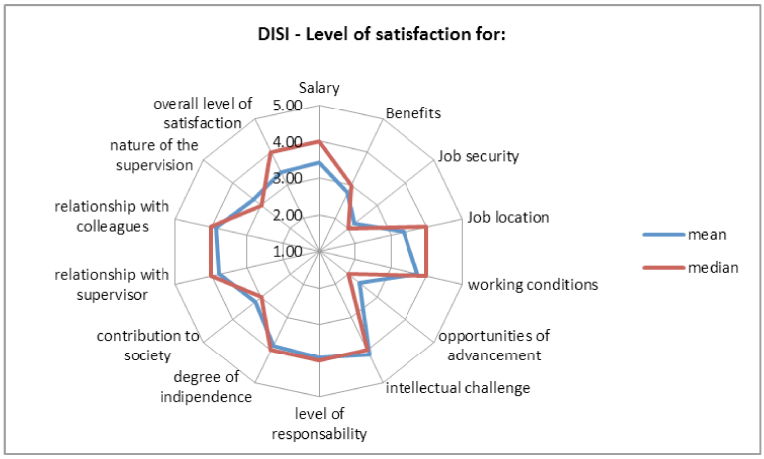
In relation to the job instability, **leavers, movers and postdocs career trajectories** described in the previous paragraphs allow to outline a range of different ways/strategies to reduce the level of uncertainty in the academic career development.

Among **leavers,** finding a job outside the academia/research sector is a way to reduce the interference of work on their life, reduce the pace of work, reconquer a balance between private life and work, and limit professional dissatisfaction and the lack of perspective experienced in the academic sector. However, in the case of female leavers, the new working position is often described as under-qualified with respect to their level of education and they continue to show low levels of satisfaction about their professional situation.

Among **movers and postdocs**, it is possible to identify some career paths that, more than others, seem to foster and enhance their long term career perspectives in the research sector. More precisely, early career researchers who have moved abroad and, only in the case of the DISI department, who are working or are planning to work in the private sector describe/perceive such job positions as more qualified, stable and better-paid that those experienced in the Italian academy. Moreover, these positions are considered as an efficient way to improve both their professional skills, and their long term career perspectives and free time for their private life as well.

Figure 2 – Level of satisfaction of those working in temporary positions – fixed-term assistant professors and postdoc research fellows – with the current work position at the DSRS or the DISI (1= very dissatisfied; 5=very satisfied) (DSRS n=18, DISI n=27)





Source: Garcia web-survey, 2015

During the interviews conducted with early stages researchers at UNITN, after exploration of various key areas – previous experience, the organization of everyday life, career development, and future prospects – the male and female early-career researchers were asked what actions or policies could improve the quality of life and work of persons with temporary positions at the university, the purpose being also to tackle the leaky pipeline phenomenon. Predictably, the answers of the interviewees referred to the main issues outlined above – contractual form, conciliation, career development, autonomy in the construction of networks – and they suggested interventions which would improve their current (or previous) situation.

In regard to policies that could improve the quality of the work of early-career researchers, one element recurrent during the interviews concerned the contractual arrangements of postdocs in Italy. It is of particular interest that, although both men and women at the two departments raised the issue, it was mainly DISI respondents who complained about employment regulations that did not recognize research as a job. In fact, although the majority of these researchers did not perceive themselves as being exposed to work precariousness, at the same time they claimed the right to have access to the same welfare measures that are available to other workers.

> *"We hybrid figures should be contractually classified in a manner which establishes that even if we have fixed-term contracts, we are employees. […] Serious thought should be given to how to cover periods out of work in terms of redundancy pay. Put simply, I think that there should be serious action of income support because I think that the lack of unemployment benefits is the main source of suffering for people in our situation" (Man, DSRS postdoc).*

> *"Well, in my opinion two things should be done: the first is unemployment benefit. This above all, because it's absurd that when you complete a work contract – which is not an employment contract but a scholarship, which is another absurdity – from one day to the next you're out of work. The second thing is, for example, calls to build your academic networks" (Man, DISI postdoc).*

As already mentioned in the introduction (and in previous works within the GARCIA Project), the researchers interviewed stressed the issue of the contractual classification of a postdoc position in Italy, which in fact does not correspond to a job but to a grant, and therefore does not give access to any form of social security. Not surprisingly, therefore, the other issues raised referred to the rights of 'standard employees', but not of non-tenured researchers, such as sickness benefit and social security.

> *"Certainly the recognition of sickness. Given that these jobs are so fluid and brief, and not recognized – at least, my grant did not include sickness insurance – protection and health insurance are important" (Man, former DSRS postdoc).*

> *"From my point of view it would be nice if there was greater recognition certainly in terms of pension contributions during the period of postdoc precariousness. It's true that the grant is tax free, but in the end you're still working. So I think that some sort of contribution should be paid" (Man, DISI RTD).*

Another matter repeatedly cited – and which is also an issue for workers not in full-time dependent employment, also outside the research sector – is the difficulty of obtaining a mortgage, even for a relatively small amount.

> *"Right, the problem of a mortgage. The fact that with your contract you can't go to the bank and get a mortgage is already a problematic issue" (Woman, DISI postdoc).*

> *"For example, in *** [other EU country] the bank didn't ask me what type of contract I had. I had to show them my pay check, but they didn't ask me and my wife about the duration of our contracts" (Man, former DISI postdoc).*

> *"It's unacceptable that, given this fact, there's no attempt to adapt the institutional and organizational forms to this situation. It is absurd that a forty-year-old person who has a fixed-term contract – and this is no longer an exceptional case – and decides to buy a house is told by the bank that the pension policies of his father and mother must be provided as guarantees" (Man, DSRS RTD).*

The researchers interviewed, therefore, on the one hand complained about their lack of rights, and on the other, emphasised how their (non-)employment contracts discriminated against them with respect to other workers and, above all, allowed only those with family support to pursue an academic career. In fact, only those with the resources to cope with periods of unemployment could look for a new position without receiving any income in the meantime.

> *"At the policy level, definitely that of income support, so that the researcher has a continuous income […]. And also to get the state to understand that it shouldn't take care only of pensioners, redundant workers, or public-sector employees but also of those trying with such difficulty to pursue a research career" (Man, former DSRS postdoc).*

> *"I that that it's crucial to give some kind of income continuity, because there's the risk that only people with their own capital will be able to carry on this type of fragmented career. There obviously arises a situation of inequality regardless of ability, research capacity, and so on. And so only those who can afford to be precarious carry on, the others have much less opportunities" (Woman, former DSRS postdoc).*

The interviewees at the DISI, and especially those from other countries, also made frequent reference to the pay of postdocs in Italy, which is well below the European average. Especially for interviewees from other countries, the pay did not match the standard of living that one would expect if working at a university.

> *"I think that maybe increasing the salary could improve living standards, this is for sure. You can have a better apartment, and then you can do so many activities without thinking about salary issues, money issues; in this sense it may improve. I think that the salary is not enough with respect to the work done in academia in general compared with other countries. In Italy I think it is really very low. But I am doing my best not to be affected by that in my social life" (Woman, DISI RTD).*

Finally, as far as the contract was concerned, proposals were also made in regard to the University, more than a structural level. It appears that postdocs are given scant information when they sign the contract, in both the departments, and in particular about their rights and duties. The difficulties are especially pronounced for those who come from other countries because a postdoc agreement is not recognized as an employment contract.

> *"One of the activities that could certainly improve the career and facilitate it … is the provision of better information. Therefore, more information, definitely: about subjects like rights or unemployment, because I really had to struggle to find the information, and I never knew if it was accurate" (Woman, former DISI postdoc).*

> *"Another thing that could have helped was information provision, so that we could know how the law for PhD students, postdocs, and so on, works; what are their rights and duties. Because we are guided by the Welcome Office on what we have to do on arriving in Italy, then we obtain a stay permit, but as regards INPS [National Social Insurance Agency], for example, we register and enrol, but then nothing more is done, so it would be good to give information" (Man, former DISI postdoc).*

> *"I think that forms of tutoring and other such things would be good, but also information on the regulations, your rights and your duties. They should explain who you are and what the rules are. This would be a very important aspect of transparency" (Woman, DSRS postdoc).*

In regard to national policies, among the women interviewed, both with and without children, there were some who specifically referred not only to income support but also to the need to be able to take a period of leave following the birth of a child, which is currently not envisaged for postdocs.

> *"The fact that you don't have decent leave, also in terms of pay, has been a major problem because the child grows, and if you need to get back to work, you have to put him somewhere. There is the need for broader support by the government on this problem" (Woman, former DSRS postdoc).*

> *"According to me, it would make sense to think about more specific employment policies like income support or extension of maternity and paternity rights. Maternity and paternity coverage should be part of the package" (Woman, former DSRS postdoc).*

To be called into question, as regards the reconciliation of work and family life, was not only the national level, but also the services that could be provided at the University. It should also be noted that, at the time of the writing of this report, there were very few places – just over twenty – at the crèche run by University of Trento, and access was regulated by a ranking list that penalized those who had non-tenured positions with respect to permanent academic and administrative staff.

> *"Support for child care and then a series of internal university services: not only the crèche but also babysitting services, a list of child-minders who could be called in the case of illness. Or different opening times for the crèche. For example, in *** [another EU country] they're open from seven in the morning to six thirty in the evening, and you have no obligation to enrol the child for five days out of five. It could be more flexible" (Woman, DSRS RTD).*

> *"One thing I think is essential is having a crèche in the department, so that women don't have to stay at home or take time off but can continue to work by leaving their child at the daycare care … but also services for personal wellness, which I think are important: also having a gym within the university, or organizing yoga classes, for example." (Woman, former DISI postdoc).*

> *"There's not an office where you can breastfeed in peace … or a space where you can change your child's nappies" (Woman, former DSRS postdoc).*

A third area in which the early-career researchers interviewed, both men and women and in both departments, thought that there was ample room for improvement concerned departmental-level actions to guide early career researchers in the academic

world. As seen in the above analysis, a key role is played by the supervisor's ability to teach the 'tricks of the trade'.

> *"From my short experience, what I have seen and more or less understood is that you need to have someone take you under their wing. […] It depends on whether you have a supervisor or in any case a professor who helps you at the beginning, this definitely, and who gives you tips, who teaches you how to do your job. This for me is the crucial point" (Man, DISI RTD).*

> *"I think that the important aspect of supervising doctoral students, but also postdocs, is informing them about themes and references, journals, conferences … what is lacking, perhaps, is support for the research process" (Man, DSRS postdoc).*

What the interviewees felt was needed (or had felt was needed when they were postdocs), therefore, was not so much knowledge about the state of the art in their discipline, or about conferences to attend and journals to read. In fact, this information seems to have been guaranteed at least to those who believed that they had a good supervisor. Rather, what appeared to be lacking were other types of knowledge more closely related to everyday research practice. In this case, there were differences between the two departments. In fact, whilst the postdocs at the DISI said that they needed to acquire management skills, those at the DSRS instead felt the need to develop skills related to the process of publishing in international journals.

> *"The big difference, I think, from when you were a postdoc is that you have to manage research projects more and to deal with students, which you perhaps didn't have the chance to do when studying for the doctorate. So on these two things, yes, there could be support on how to write a research proposal and how to manage people, because in our department we don't learn people management techniques, although these would be useful: people management, the management of resources, etc." (Man, former DISI postdoc).*

> *"Activities related to writing would be useful, even very practical things: how to publish in international journals, what to expect when you submit an article, how to structure an article; things that may seem banal but which you only learn in the field. […] What a department should do to grow its internal resources for retention, a training scheme, is one thing; but having a department that trains people to go outside is not necessarily the same thing" (Woman, former DSRS postdoc).*

Both at the DSRS and the DISI, therefore, there was a desire to learn skills that enabled an early career researcher to compete in the international market of research. The interviewees described an almost paradoxical situation – one also confirmed by the projections of quantitative studies (Bonatesta et al., 2014): on the one hand, there was very little prospect of entering the University Trento, or any other university in Italy; on the other, the departments were deficient in supporting the careers of researchers so that they had all the credentials to be able to find work elsewhere.

> *"A sort of career advisor. When I was preparing for interviews for an assistant professorship – now I've just won one in *** [EU country] – I was looking for suggestions on how to write the cover letter, the research statement, and the description of my teaching activities. These things I found by myself; there*

was no one to help me. I think it's important, because it makes the difference between whether your curriculum is discarded or whether you're invited for an interview. And then a network that advertises job opportunities at national and international level" (Woman, DISI postdoc).

A final area of action identified by the interviewees was the need to build networks, and to be able to do so independently without the supervisor's mediation. In this regard, one of the abilities that respondents in both departments thought should be developed concerned the writing of projects, especially European ones – probably also due to the fact that research funding is increasingly linked to external resources. As a result, the possibility of continuing the academic career was also entwined with fundraising capacity.

*"Activities that help with the writing of research proposals would be useful. For example, here at*** there's a specific service. There are people who help you write European projects, or help you write projects for the European Research Council. They really help you, because even if you're a good researcher, you may not know how to put your ideas in a decent project proposal with a chance of winning. And they help you so much. I think in general this strategy of helping researchers to position their research would be helpful" (Woman, former DISI postdoc).*

"In my opinion, it does no harm to teach people how to write a research project that may obtain funding. Many of my colleagues didn't know where to start, because it's one of those skills that someone has to teach you; otherwise you have to bang your head repeatedly against the wall before you learn it by yourself. This would be extremely useful in an area which does not receive massive funding" (Woman, former DSRS postdoc).

Especially at the DISI, where fundraising and writing project proposal were activities certainly more developed than at the DSRS (also funding possibilities were much more numerous) the more senior postdocs cited among the measures to be proposed to the University the possibility of presenting a project as Principal Investigator. This would enable early-career researchers, but ones with non-permanent positions, to demonstrate their independence in research and build their own professional networks. Some of the interviewees had already tried to carry out initiatives of this kind, but so far with little success.

"The academic senate could approve an incentive and permission for postdocs to be the PIs of projects: this would be useful for people's personal growth and would give some recognition and satisfaction. At the moment it's not allowed, except for funding like the ERC Starting Grant and the Italian SIR. But there's strong opposition, because when they hire a postdoc, he must do what they want him to do. They don't give a damn about the fact that a postdoc can bring in a project, money, jobs for new people, give visibility and resources to the university. Very disappointing. It's sad because in the end they have nothing to lose. […] When you apply for an ERC or some more serious funding, they want to see independence in research … but here they don't give you that independence. You can't have something that you can't have. Even if someone doesn't have a fixed position, the university could still advance their career, giving the recognition that they deserve. But it doesn't." (Man, DISI postdoc).

> *"The problem is that we can't be the PIs of projects. In these years I've had a PRIN project [funded by the Ministry of University] – actually not as PI because I couldn't be, but I was the who managed it. Not being able to sign the projects that you write is something of a recurrent issue for the more experienced postdocs and RTDs. It's not a mechanism that has to do with the individual; it's the system itself which prevents you from being PI in these projects" (Man, DISI RTD).*

Besides the writing of projects, a further element considered essential for building academic networks was participation in conferences and spending periods as a visiting scholar at other universities. This was a topic not mentioned at the DISI, but it was prominent in the accounts of the interviewees of DSRS. Whilst at the Department of Computer Science, in fact, the large number of projects and the consequent availability of funds meant that it was not difficult to cover the mobility of early career researchers, frequent at the Department of Sociology and Social Research were situations in which postdocs had no mobility funding, not even for participation in conferences. As a consequence, the DSRS postdocs were unable to present their research work to international audiences and/or build networks outside Italy.

> *"One: to facilitate international mobility much more than happens now, which means periods of study in departments around Europe and the world. Two: encouraging participation in calls for papers, in serious and selective conferences where they do not take anyone who drops in while on a sightseeing tour" (Man, DSRS RTD).*

> *"Clearly, if there were support for international mobility, conferences, and transfers … that would be great …". (Woman, DSRS postdoc).*

However, networking consisted not only in establishing contacts outside the department in which one worked but also in maintaining contacts with researchers who had worked in that department in the past but were now working elsewhere. On the one hand, this would allow construction of a kind of peer-mentoring system that fostered collaboration among early-career researchers; on the other, it would give greater visibility to persons who had spent part of their academic careers at the University of Trento and were looking for posts either at other universities or in contexts outside research.

> *"First, the department could gather together all those people who have collaborated in the past and of whom it has probably lost track. These are resources that have gone elsewhere to enrich other departments and other universities. The department has trained these people and then they have in some way vanished. I would gather these people together and I would brainstorm with them to try to understand – rather like you're doing now – what has worked and what hasn't, in a process that is shared and participatory. Another thing that I would do is ensure that these people talk to each other, that the various young researchers, PhD students and postdocs know what the others are doing so that they can develop ideas for organizing workshops, publish together or participate in calls. So it would be a networking process." (Man, former DSRS postdoc).*

> *"The University could seek to make it possible for researchers to continue to work, not only in academia, by creating an information and dissemination*

system … a sort of register of former collaborators". (Man, former DSRS postdoc).

The analysis of the interviews in regard to the policies – at national or organizational level – which the early career researchers proposed to improve the quality of their everyday work and support the development of an academic career, primarily evidenced the difficulties encountered by the interviewees. But it also enabled the team of the Project GARCIA researchers to plan actions for structural change to be implemented by the University, and in the two departments selected, using a participatory approach. The Gender Action Plan thus developed could in fact be based on the needs and proposals originating directly from the project's target: that is, people working in universities with temporary contracts.

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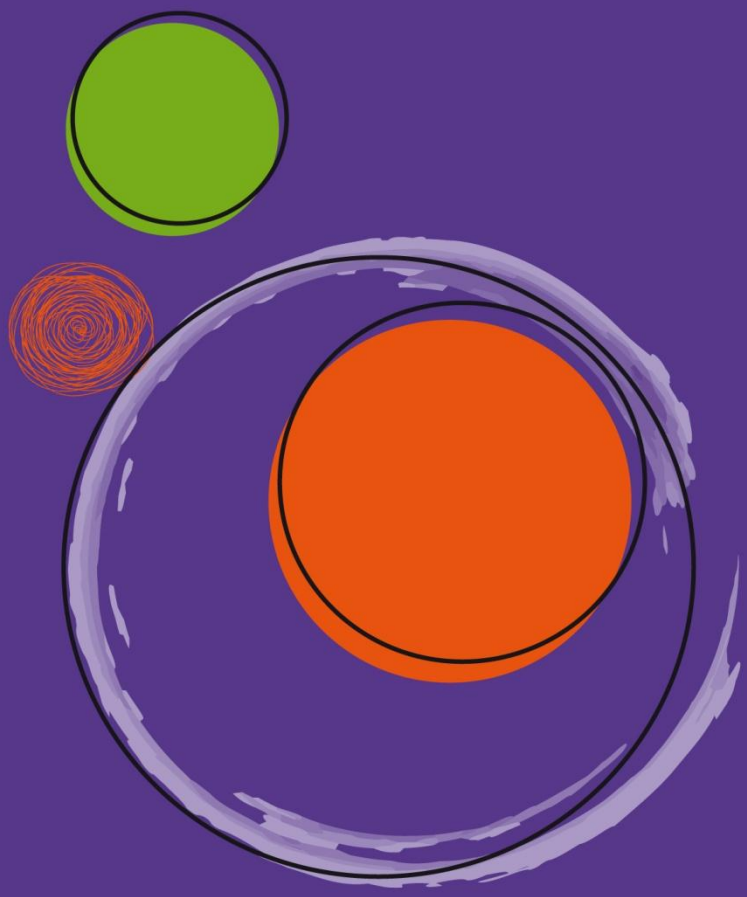

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