Perceptions of Entrepreneurship Among Graduate Students: Challenges, Opportunities, and Cultural Biases

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Abstract: The purpose of the paper is to examine the perceptions of entrepreneurship of graduate students enrolled in

a digital-oriented entrepreneurship course, focusing on the challenges and opportunities related to starting a business. In today's digital era, businesses heavily depend on tailored software solutions to facilitate their operational processes, foster expansion, and enhance their competitive edge, thus assuming, to a certain degree, the characteristics of software companies. For data gathering, we used online exploratory surveys. The findings indicated that although entrepreneurship was considered an attractive option by students, very few of them declared that they intended to start a business soon. The main issues raised by the students were internal traits and external obstacles, such as lack of resources and support. Gender discrimination and cultural biases persist, limiting opportunities and equality for women. In terms of gender, women face limited representation in leadership roles, are expected to do more unpaid 'family work', are perceived as less capable in ding business, and need to prove their skills. Even if women are less discriminated now, both genders agree that women still face discrimination in business domain. In terms of percentages, women mentioned gender discrimination in higher percentages. Addressing these issues requires awareness, education, and policy changes to ensure

fair treatment and opportunities for women.

1 INTRODUCTION

Entrepreneurship is a significant contributor to economic growth, prompting a call for increased education in this field among students, teachers, and employees (Klofsten et al., 2019). For this reason, entrepreneurial courses were included in the curricula of many universities and colleges. Various educational workshops and programs were created to expose people to these concepts. European Union has also responded to this growing demand with its *Entrepreneurship 2020 Action Plan*¹, which aims to foster the exchange of best practices in entrepreneurial education.

The emphasis on entrepreneurial-centered educational initiatives appears to have yielded positive results, as evidenced by the upward trend in the number of new businesses established in Europe in recent

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¹https://ec.europa.eu/growth/smes/ supporting-entrepreneurship/entrepreneurship-education/ commissions-actions-entrepreneurship-education_en years, up to 2023 (Statista, 2022). However, according to McDowell (William et al., 2019), entrepreneurs experience a trade-off between dedicating themselves to their own business, which may improve their job satisfaction, and the negative consequences of emotional exhaustion, which tend to outweigh this benefit. Alternatively, (Padovez-Cualheta et al., 2019) found that entrepreneurs report higher levels of family satisfaction. In the contemporary era characterized by digital advances, a wide range of businesses rely heavily on software and digital tactics to flourish and engage in competitive endeavors. It can be argued that every entrepreneurial enterprise that embraces innovation can be categorized, to some extent, as a software company (Chandra et al., 2022).

Small companies are more innovative; they struggle and can adapt more easily (Tor, 2017), so it is essential to stimulate their development In this context, our objective is to assess the intention of postgraduate students enrolled in an entrepreneurial course at Babes-Bolyai University to start a business, the challenges they perceive in this particular domain, and cultural biases. This study has the potential to ob-

tain accurate results because it was organized at the university level, so the enrolled students were from 22 faculties within the university, different specializations and different cities in the country.

The present study has been conducted with two specific objectives in mind. The first objective is to find out if there is a correlation between students' perception related to the importance of entrepreneurship and how it affects the decision to start their own business. The second objective is to understand the main factors that discourage recent college graduates from pursuing entrepreneurial endeavors. We took into account and analyzed the responses received from students using a survey related to opportunities and challenges in entrepreneurship.

The paper is organized as follows: Section 2 covers related work, and in Section 3 we provide a thorough explanation of the environment in which we did the researchSpecifically, Section 4 outlines the data collection process and the analysis of our research questions. We have also taken measures to address potential threats to the validity of our study, as outlined in Section 6. Finally, Section 7 contains the conclusions and some thoughts on future work.

2 RELATED WORK

Entrepreneurial pursuits represent a significant part of the specialized literature. One of the primary areas of focus in research refers to the significant obstacles that young people face when embarking on entrepreneurial endeavors. It also assesses the effects of entrepreneurial education in addressing obstacles.

Teaching entrepreneurial skills to students begins with teaching entrepreneurial skills to teachers. The importance of improving teachers' competencies in academic technology (not only in business schools but also in engineering programs) and broadening their pedagogical strategies to incorporate novel and innovative methods for teaching entrepreneurship is emphasized in (Kuratko, 2005). (Pittaway and Cope, 2007) used a systematic literature review (SLR) to examine several themes in the education of future entrepreneurs. The authors arrive at the conclusion that there exists a lack of clarity regarding the definition of 'entrepreneurship education' and the specific outcomes that are intended to be achieved through its promotion. Furthermore, it has been recommended that improving the evidence base can be achieved through increased investment in the examination of entrepreneurial education, with the aim of assessing the effectiveness of interventions.

Multiple studies, including the aforementioned

references and additional sources ((Neck and Greene, 2011), (Ratten and Usmanij, 2021), (Boldureanu et al., 2020)), agree that entrepreneurial education is of considerable significance and has the capacity to influence individuals' mindsets.

The context-dependent and gender-aware impediments for female entrepreneurship are discussed in (Espinoza Trujano and Welter, 2020) and their impact in the digital era in (Ughetto, 2020).

Most papers show that entrepreneurial education is well recognized and needs more research to fully understand its impacts on gender biases. This study empirically examines entrepreneurial perspectives in the context of digital transformation.

3 OVERVIEW AND STRUCTURE OF THE STUDY

Our investigation considered the feedback provided by students who were registered in the elective digital-oriented online course "Fundamentals of Entrepreneurship", at Babes-Bolyai University through a concluding survey. This section provides an overview of the course and the demographic of the students.

3.1 Course Overview

"Fundamentals of Entrepreneurship" is a crossdisciplinary program accessible to all master's students of Babes-Bolyai University, Romania. The course is elective, contains 14 lectures of two hours long, and is open to students from 22 faculties.

The course was developed with the underlying premise that there is a significant correlation between entrepreneurship, innovation, and software development, which is primarily influenced by market dynamics, scalability, cost effectiveness, and the transformative capabilities of digital technologies. We believe that software is an essential enabler of innovation, efficiency, and competitiveness. Some companies are heavily dependent on software, even if they are not classic software companies. Thus, even in non-software businesses, software helps innovate and achieve goals. All of these ideas were considered during the selection process for topics and speaker choices for all course lectures.

The "Fundamentals of Entrepreneurship" course provides students with the opportunity to acquire foundational knowledge in the field of entrepreneurship. This includes instruction on essential skills such as developing business plans, evaluating solutions and understanding the needs of future consumers and competitors. Moreover, numerous topics encompass multidisciplinary elements wherever information technology (IT) assumes a substantial role. Consequently, lecturers frequently discuss topics related to digital transformation and digitization. In addition, the course covered aspects related to learning various software tools, including their optimization and how to create a business plan using them. Each lecture was taught by a specialist in a specific field. The speakers were university colleagues or distinctive individuals from the local entrepreneurial ecosystem. The lectures have a strong emphasis on practical and digitization aspects.

The distinctive character of the course can be attributed to several factors: participant's diversity, teaching method, and speaker's selection. Teaching students from different master programs needs flexible methods to suit varying origins, knowledge levels, interests, and views, enabling cross-disciplinary integration. Due to the geographical distribution of the students, we opted for an online course and online access to course materials, video recordings, evaluations, and announcements. While the course faced organizational challenges due to its diverse participant base, it capitalized on diverse expertise, geographical distribution, and industry insights to create a dynamic and enriching learning environment for technology entrepreneurship students.

At the beginning of the course, we collected information on students' perceptions of gender discrimination and cultural biases. Furthermore, after each lecture, we requested feedback to assess the level of student engagement, their comprehension of the material covered, and their general attitude and perception toward the course and the information presented. The authors' research on course organization problems and student evaluation of course content and structure was published in (Petrescu et al., 2022).

3.2 Participants Demographics

As indicated in the preceding section, the students who participated in the course were registered in different faculties located in various locations (urban areas) where the university had established learning centers. As participation in the course was optional, the course was announced on the faculties' pages, and we did not influence the enrolled students' selection process. A total of 401 students enrolled in the master's entrepreneurship course. The subset of students that finally joined the course formed our survey-participant set. A group of students experienced challenges with time availability, which resulted in their withdrawal from the course at the beginning.

4 DATA COLLECTION AND ANALYSIS

The main objective of our study was to conduct a qualitative investigation into the student's perceptions regarding the challenges and opportunities related to starting a business venture, as well as their inclination toward initiating a new company. We projected the goal into two research questions:

RQ1. What are the main factors that discourage recent college graduates from pursuing entrepreneurial endeavors? The primary objective is to identify potential modifications to the content of the Fundamentals of Entrepreneurship course that would effectively cater to the critical requirements of young learners. Consequently, we have conducted an analysis of the factors that serve as disincentives for individuals to pursue private entrepreneurship.

RQ2. Which are the cultural biases that influence entrepreneurial activity? Subsequently, an examination was conducted on how students place themselves with respect to cultural biases and discrimination as a whole and the degree of significance they attribute to entrepreneurship within a broader economic framework. This positioning can provide us with valuable information on the importance of this issue for adolescent learners and their desire to pursue this path.

We collected the responses using an online survey. The survey remained open for two weeks to allow everyone to respond despite a busy schedule. In this study, we used quantitative methods; specific questionnaire surveys according to the specification of empirical community standards (Ralph, 2021) and thematic analysis (Braun et al., 2019) to evaluate the responses to open questions. Questionnaire surveys and thematic analysis were used in other studies related to computer science (Redmond et al., 2013; Petrescu and Sterca, 2022; Motogna et al., 2021).

To comply with the ACM standards (Ralph, 2021), we worked in parallel using the following procedure: collecting the data, performing a brief analysis of the responses, reallocating the answers to other questions (if they were better fitted), determining specific keywords, and grouping them into classes. The classification was verified by the other author, who also made some observations. Both authors analyzed the observations together, decided if and what changes were necessary, and performed them.

Some answers contained exactly one keyword, other answers contained more keywords, and there were questions for which we did not have any answers. When we analyzed the results, we decided to

use the prevalence appearance of the keywords compared to the total number of answers; therefore, the results obtained are expressed in percentages, but the sum of all percentages was not 100% (because the answers contained more than one keyword). The questions asked in the survey can be visualized in Table 1. Closed-ended questions, such as those about gender, were used to categorize the participants and facilitate the formulation of conclusions.

Table 1: Survey Questions.

Q1	What faculty are you from?
Q2	How do you identify yourself? (man, woman, other)
Q3	What are in your opinion the major challenges when
	starting a business?
Q4	Do you want to start a business? (yes / no)
Q5	If you want to start a business, when do you plan to start
	it?
Q6	Is entrepreneurship an attractive option for young peo-
	ple? (open question)
Q7	Do you believe that women face discrimination in en-
	trepreneurship? (open question)
Q8	Do you believe that men face discrimination in en-
	trepreneurship? (open question)

4.1 RQ1: What Are the Main Factors that Discourage Recent College Graduates from Pursuing Entrepreneurial Endeavors?

To find the response to this question, we asked students at the beginning of the course what they considered to be the major issues and challenges that could appear when starting a business. From a psychological perspective, people may find it easier to achieve emotional detachment, allowing for a clearer analysis of the challenges faced by young entrepreneurs. A portion of the student population, specifically 14.66%, opted to abstain from responding to this inquiry. However, other students provided a diverse range of examples that have the potential to influence and dissuade recent college graduates from embarking on entrepreneurial pursuits.

4.1.1 General Overview

The identified challenges can be grouped as external challenges (context, laws, other people's influence), and challenges that are tightly related to each person's skills and methods of solving a problem. The most mentioned challenge was an external one, the fight with *general perception* 25.67%(men are better compared to women or young people can not create a business). This challenge is related to the second most mentioned one: *Lack of respect/authority* mentioned

by 9.45%, as the third: *Lack of credibility* scores half of the second. According to the responses received, women also face challenges in terms of credibility due to gender biases. Unfair stereotypes can undermine their expertise and decision-making skills, impacting career opportunities and personal interactions.

Fluctuating income also scores high on perceived challenges. Irregular earnings can lead to financial instability, making it challenging to cover essential expenses consistently. Planning for fluctuating income often involves budgeting, building savings, and establishing a financial safety net to mitigate the potential risks associated with income variability. Other external challenges mentioned by students are "Fear of failure" or "having too high expectations", "Time constraints", "Family constraints" (family work, including care of children).

The students expressed challenges related to the skills of each person: Overconfidence, Impulsiveness, Lack of commitment, Perfectionism or Lack of organization. In the students' responses, we could find one or more keywords from both types of challenges: "Barriers like confidence", "Not taken seriously", "Gender discrimination, prejudice, sacrifices made in the family", "lack of time, perfectionism, responsibility for the family, fear of failure".

We classified the challenges into three main categories, the first one involves external challenges, the second one includes the skills and characteristics of each person. The last category is related to the generic business environment as mentioned in Table 2.

Table 2: Entrepreneurial challenges classification.

External	General Perception (Cultural Biases), Gen-
challenges	der Discrimination, Lack of respect and au-
	thority, Time constraints, Lack of credibility,
	Family work
Personal	Overconfidence, Impulsiveness, Fear of fail-
challenges	ure and too high expectations, Lack of skills,
	Lack of organization, Perfectionism, Lack of
	commitment
Other	Fluctuating income, Financial issues, Market
	competition

Challenges related to economic skills, marketing, manufacturing, financial knowledge, and lack of resources (human/other types of resources) have an insignificant prevalence in received answers. We found the reason for this when we checked the answers related to the student's previous experience in entrepreneurship - most of them do not have any experience, or they have experience only in a specific area (such as sales). As we collected data at the beginning of the course, our students did not know or perceive these challenges as such. In subsidiaries, it reflects the lack of entrepreneurial knowledge and the importance

of teaching entrepreneurship.

In conclusion, the main challenges mentioned by the students refer to external factors, to cultural biases, when the role of women in the family is primarily related to the raising of children. Subsidiary, they also mention challenges that are personal characteristics: impulsiveness, capacity to make fast decisions, perfectionism, or lack of organization.

4.2 RQ2: Which Are the Cultural Biases that Influence Entrepreneurial Activity?

Since companies owned by women are underrepresented, we were interested in the cultural biases related to gender discrimination. As innovation is driven by young people, we analyzed cultural biases related to young people in entrepreneurship.

4.3 Gender Discrimination

According to INSSE, in Romania, only 26% of the IT companies were started by women. Taking into account that the number of women in Romania is 5% larger than the number of men², we can conclude that women are underrepresented. Therefore, it is important to understand the reasons behind this disparity. Knowing the reasons, universities and other institutions could take action to improve the percentage of women in the IT entrepreneurship sector.

When we analyzed the responses, we realized that our participants (regardless of their stated gender) have the same beliefs about young people being perceived as less capable compared to a more mature generation. However, in terms of perception of women versus men's capabilities, the ideas are a little more nuanced: women still struggle with the general perception: "traditionally, she takes care of the house, family and does not do business". Another answer stated the general perception as a challenge for women without offering context or explanations: " I would say they ('men') are less negatively discriminated compared to women". Both genders seem preoccupied with work/life balance and mention the same issues, one man wrote: "Balance family and business responsibilities", other woman specified: "Gender discrimination, prejudice, sacrifices made in the family".

The perception of discrimination in entrepreneurship differs by gender as a percentage, although both genders perceive that there is gender-based discrimination. In addition, there is a collective perception in the responses received according to which women are perceived to be less capable than men and have more challenges related to family care, since they are the main caregivers. Women often face unique challenges related to time management and involvement due to societal expectations.

Men and women (as genders) are perceived to have different sets of skills that would help them in a specific situation. Men are seen to be more competitive and willing to take risks compared to women: "Sometimes men risk too much" and women are seen to have less credibility: "Women may have less credibility". There was a small percentage of women, less than 10%, and less than 5% of men who considered women not discriminated against. Men seemed to be more straightforward: "They are not", "I don't think they (women) are discriminated", even if we got some answers that have more details: "I don't believe there are disadvantages based on gender or that women are discriminated; If you are capable and determined, gender doesn't matter."

Based on the answers, we could determine a perception of skills that defines genders, "women are more rigorous" or "men are more capable", but to determine a pattern, we need a larger number of responses and we need responses to questions related to perception of gender-specific skills. These comments appeared in the answers to questions related to gender discrimination; therefore, we consider that we cannot provide statistics on gender-perceived skills.

The percentages of responses considering that women are discriminated are much higher: around 25% of women and around double for men, as can be seen in Figure 1. Visualizing, in terms of discrimination, men and women state that women are discriminated in entrepreneurship according to their gender, the percentages are shown in Figure 1.

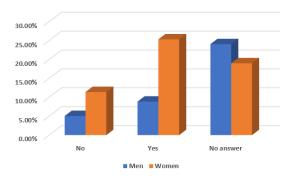


Figure 1: Are women discriminated in entrepreneurship?

However, their open questions reflect a cultural bias, as women are perceived to be less capable compared to men. When asked if women are discrimi-

²https://insse.ro/cms/demography-in-europe/bloc-1b. html?lang=en

nated, the responses reflected two positions: assumed positions by women: "lately, I think not", "I believe that in our country women are discriminated" and by men: "Yes, until they manage to prove their skills. They start their journey with this minor handicap". Sometimes, the students' responses reflect the general perception of society: "Because of the general perception, men are perceived as more capable/resourceful in general", "The mentality is that men are the ones who lead" or "women are not taken seriously", "misoginism". In terms of discrimination, both genders consider that men are less discriminated based on their gender in entrepreneurship, the percentages are shown in Figure 2.

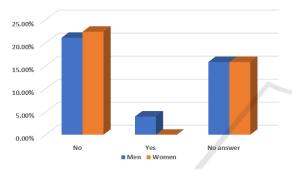


Figure 2: Are men discriminated in entrepreneurship?

Some comments stated that general perceptions and cultural biases are changing: "Unfortunately, sometimes yes, but they (women) are less and less discriminated against, and the world is progressing in favor of equality". Awareness campaigns and education have empowered individuals to challenge gender biases. While progress has been made, challenges remain, such as the gender gap and underrepresentation in certain fields such as computer science or entrepreneurship.

In conclusion, even if there are opinions that state there are no major challenges related to gender: "I don't think there are gender disadvantages, if you are capable and determined, it doesn't matter gender", the main perception (over 63% of the answers) mentions that women have more challenges compared to men when we talk about starting and running a business. According to our data, even if both genders state that women are discriminated, women perceive gender discrimination much more compared to men, more than 25% of women considered to be discriminated versus less than 10% men.

4.4 Age Influence

To find the answer to this research question, we analyzed the responses received to the following ques-

tions and correlated the answers:

- Do you consider entrepreneurship to be an attractive option?
- Do you intend to start a business?
- When do you plan to start a business?

The large majority of the students (36.00%) found entrepreneurship very attractive, 34.67% found it attractive, and 6.67% of the students did not answer this question.

To establish a correlation between the questions, we took into account the distinction between the enticement of entrepreneurship and the inclination to initiate a business venture. Even if entrepreneurship scores high in attractiveness, in our study we found that their intention to start a business is much lower; 45.33% stated their interest in opening a business, 44.00% mentioned that they do not want to start a business, and 10.67% did not answer this question. Thus, there is a 20% difference between the stated domain attractiveness and their intentions to start a business. The survey was completed at the beginning of the course, so students lack awareness of potential challenges in various business-related domains, such as financial and competition-related issues, marketing, or developing a product. These challenges will be discovered throughout the course and can have an impact on the percentages. The attractiveness percentages are shown in Figure 3.

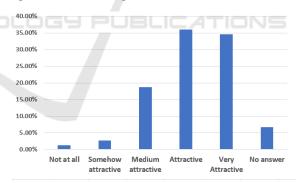


Figure 3: Is entrepreneurship an attractive option?

We used a five-point scale to assess the desire of students to start a business within a designated time-frame. We considered that the first two options, as soon as possible and in the near future are the best predictors of their intentions to start a business. The question was optional, so we considered that the students who did not answer this question do not have specific plans and, most probably, do not have any intentions to start a business soon. When asked in detail to confirm their intention to start a business, a large part of the students stated that they intend to start a business after 5 or more years. Approximately 20%

of the students did not answer this question; we interpreted that the lack of response was due to the fact that these students probably do not want to start a business at all. The percentages are detailed in Figure 4.

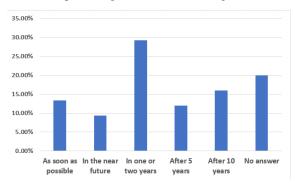


Figure 4: When do the students plan to start a business?

There were answers reflecting a possible reason why students do not want to start a business: cultural bias and perception that consider young people are discriminated: "yes, if the person is young".

In conclusion, students consider entrepreneurship to be an attractive option for young people even if they need to confront some cultural biases, and only 22.66% stated that they intend to start a business soon or in the near future.

5 MITIGATION ACTIONS TO OVERCOME CHALLENGES

Depending on the prevalence and type, for each challenge, there should be a different mitigation action. Some challenges such as legal constraints or changes in the financial environment can be mitigated only by learning: Students should realize that there is no perfect /stated solution and that they must adapt depending on the new conditions.

Regarding **internal challenges**, students face various challenges in their personal skills that can hold them back from reaching their full potential. These challenges come in different forms, such as communication difficulties, time management problems, lack of self-confidence, personal traits (embracing risks more easily), or difficulty in handling stress. However, with self-awareness and acceptance and a willingness to change and adapt, it is possible to overcome these challenges and develop into more capable and resilient individuals. As these challenges are specific to each individual, only a generic approach can be discussed in a course.

The **external challenges** can be grouped into two major types: those that apply to both genders and

those that apply mainly to a specific gender. By cultivating a mindset of perpetual education, students can effectively mitigate various challenges (market understanding, risk management, lack of financial literacy). Other challenges (such as team building and leadership) require hands-on actions that can be obtained by working in the domain for other companies or starting a business.

Gender biases have long been an issue in society and impact various aspects of life, including the workplace. These biases perpetuate stereotypes and hinder women's progress. By raising awareness, fostering empathy, and promoting inclusivity, individuals can create a more equitable and supportive environment. Having more women in this domain, the general perception will change as people adapt to new realities.

6 THREATS TO VALIDITY

When we developed this study, we considered the guidelines and recommendations for survey research detailed in (Ralph, 2021), and we considered that we must address the following threats to validity: the set of participants (target population and participant selection), contingency actions for dropouts, author's subjective approach, and research ethics.

Participant Set. The survey was sent to all students enrolled in the entrepreneurship course. We did not select any participants; survey-related information was sent to all students enrolled in the course. Participation in the study was optional and was each student's personal decision. Due to this approach, there was no threat related to the target population and participant selection.

Dropout Rates. We tried to mitigate this threat by sending only one online survey, by limiting the number of questions and keeping it open for two weeks.

Regarding the **research ethics**, we did not enforce participation (this can be confirmed by the participation rates) and we let everyone know about the anonymous character of the survey. We did not put any restrictions on answering all the questions, as the questions were optional. Because of this approach, we eliminated biases related to compulsory behavior and ensured that we got relevant data. We also informed the students about the purpose of collecting these data and how we will use the data collected.

When humans intervene in a process, there is always the issue of a **subjective approach** that influences the results. We tried to mitigate this risk by following the guidelines and procedures recommended and used by the computer science community for this type of research and for text interpretation.

7 CONCLUSIONS AND FUTURE WORK

We examined potential challenges to launching a business and opportunities by examining the attitudes and opinions of graduated students about entrepreneurship. Few students express a desire to pursue entrepreneurship in the near future, despite the fact that most find it an attractive alternative. The results emphasize the need for entrepreneurial education to provide a more thorough understanding of the skills and knowledge necessary to successfully establish and operate a business. The study also shows that personal and external traits (such as lack of capital and support) can pose serious obstacles.

Gender discrimination and cultural biases persist, limiting opportunities and equality for women. In terms of gender, women appear to have more challenges compared to men, women face limited representation in leadership roles, and are expected to do more unpaid "family work", taking care of children and family. They have to face the stereotypes of society, are seen as less capable, and need to prove their skills, to prove that the general mentality is wrong and that not only men are leaders. In terms of percentages, women mentioned gender discrimination in higher percentages. Addressing these issues requires awareness, education, and policy changes to ensure fair treatment and opportunities for women.

To enhance and motivate students to engage in entrepreneurial endeavors, it is imperative that future research investigates pragmatic solutions to these challenges, as well as techniques aimed at improving entrepreneurial education and mitigating gender prejudice. The fight against gender discrimination is far from over, but there is a positive shift toward a more equitable and inclusive world where individuals are judged based on their abilities rather than their gender. This inclusive world can become a reality with the help of education and policies that promote equal respect and authority for women.

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