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Research Capacity of European Academic Researchers in an Age of Change

Abstract: The scholarly literature makes clear that universities' research and innovation fuels the knowledge economy, and nations globally are committed to strengthening academic institutions' research capacity and productivity. As the driver of innovation and invention, academic research requires competent scholars who can contribute to the progress and prosperity of local and global societies. Regardless of context, academic researchers are increasingly viewed as knowledge producers and catalysts for societal change. Recognizing the importance of research capacity and the fact that scholars operate within ever-changing research environments, this study explores the productive research activities and core competencies of 18 European academic researchers. Data for this qualitative study were collected in 2018 via an open-ended questionnaire developed using the cloud-based SurveyMonkey software. The findings reveal a broad list of core competencies that are prerequisites for scholars seeking to engage in effective research activities and achieve recognition as productive academic researchers. The findings also identify several factors that inhibit or limit productive research activities. The study's results will be a helpful resource for a wide audience across the academic spectrum, including doctoral students, scholars, research personnel, research directors, and university leaders.

Keywords: academic researchers, research competence, transformations in research activities, research productivity, research capacity, European research

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Scientific article

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Introduction

Globalization and the mobility, intense economic competition, transition to a knowledge economy, and rapid advances in communication technology associated with it have reshaped the research landscape worldwide, requiring academic researchers to adapt. Scholars operate in a constantly changing environment; thus, their research capacity and output have become of paramount importance. As Chubb (2013) notes, the global focus on research competence and productivity derives from the connection between a strong culture of innovation and national prosperity. For this reason, nations around the world now regard higher education institutions as instruments of national competitiveness in the global knowledge economy and provide funds for university research (Niemczyk 2018). Powell and Dusdal (2017) point out that Europe is at the centre of science productivity, with top producers like France, Germany, and the United Kingdom. As Arimoto accurately explains (2009), universities contribute to scientific knowledge development and thus the advancement of all sectors within a society. As further described in the European Commission's (EC 2010) *Europe 2020: A European Strategy for Smart, Sustainable and Inclusive Growth*, the multi-pronged mission of research is to promote excellence, drive international competitiveness, and provide solutions for pressing issues: »Smart growth means strengthening knowledge and innovation as drivers of our future growth. This requires improving the quality of our education, strengthening our research performance, promoting innovation and knowledge transfer throughout the Union, making full use of information and communication technologies and ensuring that innovative ideas can be turned into new products and services that create growth, quality jobs and help address European and global societal challenges.« (EC 2010, p. 9)

The accomplishment of these goals calls for high-quality academic research conducted by scholars who are, at a minimum, competent. It is important to recognize that the constant advances and changes in research environments require scholars to acquire and nurture new knowledge and skills. Fowler et al. (2009) argue that capacity-building strategies need to be offered to researchers at all career stages: »In planning capacity building and researcher development initiatives, it is imper-

ative to understand the occupational socialization/learning of researchers, their journeys from novice to expert, the infrastructures and support required, and the opportunities to develop coherent learning trajectories« (p. 19). It should be added that researchers without proper capacity-building experience will lack the skills to conduct quality research and thus meet productivity expectations.

Schiersmann et al.'s (2016) handbook, *European Competence Standards for the Academic Training of Career Practitioners*, provides a framework of what an expert should be able to do to fulfil a number of specific duties and aims: »competence standards go beyond a shared agreement about the professional roles and tasks, which all career practitioners in all European countries should be prepared for. Competence standards also include an educative dimension and focus on the ability of practitioners to fulfil their roles and responsibilities« (p. 25). The key question, however, is whether academic researchers can fulfil their roles and achieve these goals in a changing research landscape. According to Mulder et al. (2009), specific knowledge, skills, values, and attitudes that together constitute competence in an area are required; yet, more focused knowledge or selective skills may not be enough to consider an academic researcher competent. To that end, a clear understanding of the level of research competence required and rewarded would be not only helpful but also necessary (Niemczyk and Rossouw 2019).

More than a decade ago, the APEC/Deloitte (2010) joint consulting group published a report outlining current and anticipated competencies required in the research profession in the decade to follow. The study involved eight countries – France, Germany, Finland, the Netherlands, the United Kingdom, Switzerland, Japan, and the United States – and specified 20 core competencies across three categories (scientific competencies; project and team management skills; and personal aptitudes/interpersonal skills) that all countries under investigation identified as required of researchers. In terms of scientific competencies, the respondents noted scientific knowledge, ability to learn and adapt, ability to formulate a research issue, capacity for analysis and grasp of sophisticated information technology tools, ability to work in an interdisciplinary environment, and ability to incorporate existing knowledge. The management skills reported were ability to work in a team, ability to develop a network, communication skills, ability to assess, language skills, business culture and management skills, project management skills, ability to manage and steer teams, and awareness of the pertinence of research and its impact on the environment. Lastly, the personal aptitudes/interpersonal skills category consisted of creativity, open-minded approach, motivation/involvement, adaptability, and ability to self-assess (APEC/Deloitte 2010, p. 6). The APEC/Deloitte report found that »a structured strategy for managing researcher competencies appears to be essential.… Europe's higher education institutions should provide the necessary impetus, building on the Bologna Process, the Lisbon Strategy, and the definition of a common core of key competencies« (p. 12).

An EC (2016) report noted how the European Union was increasing its financial commitment to research and innovation funding through the Horizon 2020 programme and the European Structural and Investment Funds. The EC's Erasmus program is an example of the Union's commitment to and investment in

the development of academic and scientific competencies. The program offers a wide range of opportunities and provides space for novice and experienced researchers to acquire the knowledge and skills they need as researchers in an increasingly complex and competitive world.

The European University Association's (EUA 2021, p. 5) *Universities Without Walls: A Vision for 2030* report states that the global pandemic is »leading to a rapid expansion in digital provision and research capacity to solve major societal challenges. This is likely to have a long-lasting impact in the future. The knowledge base built by curiosity-driven basic research has been the foundation of a quick response to the challenge and should be preserved in order to prepare for future challenges«.

The EUA report predicts that universities' future operations will entail the creation of holistic research environments – both physical and digital – and promoting academic self-discipline. In its priorities for action, the EUA report also notes reforms to academic careers. As to the potential nature of the universities of tomorrow, it is clear that the roles of academic researchers will be affected in ways large and small. In fact, those roles, driven by globalization and constant advancements in technology, have already been impacted, sometimes profoundly, by changes over the past two decades (Niemczyk 2020). With this in mind, attention to productive research activities and the competencies required to accomplish them becomes of paramount importance. To that end, this article explores the research activities and core competencies of 18 European academic researchers.

Research methodology

This paper is based on a qualitative research study for which ethical clearance was secured from the author's institution. The study relies on an interpretivist paradigm to explore and understand the subjective world of human experiences (Guba and Lincoln 1989), so meaning was made based on the respondents' lived experiences and perceptions through the collection and interpretation of qualitative data. The study's open-ended questions were carefully formulated to provide meaningful and interpretable data (Popping 2015). This paper addresses the following research questions:

- What is expected of academic researchers in terms of competencies?
- What is expected of academic researchers in terms of productive research activities?
- What factors influence productive research activities?

For the present study, the responses of 18 European professors and lecturers who identify as academic researchers were selected from a larger research initiative. The respondents hailed from Cyprus, Germany, Greece, Hungary, Ireland, Italy, Poland, Spain, Russia, and the United Kingdom. They belong to different educational communities, are experts in diverse disciplines, and represent both genders (12 females and six males).

Data were collected in September 2018 using an open-ended questionnaire developed using the cloud-based SurveyMonkey software. Respondents were invited to complete the questionnaire, assured that their participation was voluntary, and promised that their responses would remain anonymous. After data were collected, responses from the questionnaires were transferred to an Excel file and carefully reviewed, coded, and categorized. The codes that emerged were grouped into categories, after which themes that could help answer the research questions were identified. To provide credibility and transparency to the interpretation of data, the study reports selected excerpts from the respondents' statements (Roller and Lavrakas 2015). In some instances, the wording and punctuation in direct quotes were modified to facilitate understanding and enhance readability while staying true to the meaning conveyed by the respondents (Lewis 2020).

Results

As explained in the methodology section, the themes that emerged from data analysis were crafted according to the study's three research questions. In alignment with those questions, this section is divided into three parts: core competencies, productive research activities, and factors influencing productive research activities. The results are complemented by scholarly literature to provide a more holistic vision of the context in which the perceptions of the 18 European academic researchers who served as respondents are grounded.

Core competencies

The EC (2017) is committed to ensuring that scholars in Europe have appropriate research knowledge and skills. Through a variety of programmes, the EC ensures that developing research competencies is an integral component of standard school education and the professional development of scholars at universities. As further noted in the EC's report, »researchers at all career stages should seek to continually improve themselves by regularly updating and expanding their skills and competencies. This may be achieved by a variety of means including, but not restricted to, formal training, workshops, conferences and e-learning.« (2017, p. 5)

As reported by Lytvyn et al. (2020, p. 179), the European Qualifications Framework (EQF) operates in 38 countries and describes qualifications at all educational levels. Although the EQF does not enumerate research competencies, it considers them part of professional skills. In terms of this study, the respondents identified several competencies they considered necessary to conduct quality research in a multicultural and multidisciplinary context. It is important to note that several respondents clearly stated that expectations of their research and research-related competencies were growing, in keeping with developments in the academic environment. Indeed, some were very vocal about the seemingly endless growth in competencies required to effectively engage in research activities. They attributed this phenomenon to heavy competition within academia and the importance assigned

to institutional rankings, which also connects to Huenneke et al.'s (2017) position that, around the world, »increased research activity leads both to increased revenue and to higher rankings« (p. 422).

The most frequently reported competencies include an understanding of (qualitative and quantitative) research methods and research procedures, theoretical knowledge, the ability to analyse and interpret data, and the ability to write research reports and publish in national and international research outlets. Knowledge of analytical software, computer skills, and research project skills were also often cited. Respondent 6 (Cyprus) noted that »skills include the ability to conduct research, analyse the findings and write research papers and reports. The knowledge has to be sufficient both in terms of the area or field involved and in terms of research methods.« It is not surprising that the researchers placed so much emphasis on the methodology and theoretical knowledge of research, both of which are fundamental to undertaking quality ethical investigations. The knowledge of research ethics was also identified, in some cases along with the awareness of (a) human rights and (b) specific ethical requirements according to the population and context under investigation. As Respondent 8 (Poland) put it, »knowledge of core research methods and one's own discipline is a given. However, the ability to conduct ethical research in nations other than your own, paying attention to human rights and cultural sensitivities, is also a must.«

Networking skills were a recurrent theme among respondents, as was the ability to work both collaboratively and individually. Several respondents stated that it is essential to know how to establish and maintain connections with partners in different countries. It was reported that developing multicultural knowledge and cultural sensitivity is imperative, alongside awareness of cultural biases, the social conditions of the place under investigation, and cultural tolerance. It was notable that fluency in English and ideally multiple languages relevant to a researched context were identified as important. As Respondent 15 (Russia) stated, »communication skills and especially foreign language skills are valuable.«

Some respondents also cited the importance of participating in international conferences, chairing international panels, publishing in peer-reviewed journal articles, and acting as journal and book editors in the local and international research community: »Writing works for international journals; publishing works in international journals with peer reviewing on international journals; participation in conferences (local, national, and international); participation in scientific networks (LinkedIn, ResearchGate, Academia.edu, etc.); creating one's own ‚personal learning environment'; convening international conferences; chairing international panels and sessions.« (Respondent 12, Poland)

In addition to the usual research methods skills, researchers should have country expertise in a range of societies. Increasingly, there is an expectation that researchers approach societies other than their own with a degree of respect. (Respondent 11, United Kingdom)

Respondents also signalled summarizing, communication skills, collaboration skills, cultural knowledge and sensitivity, and networking skills as essential, with a few noting the importance of being open-minded, flexible, and adaptable to change.

Productive research activities

As reported by Abramo and D'Angelo (2014, p. 1131) »the objective of research activity is to produce new knowledge. Research activity is a production process in which the inputs consist of human, tangible (scientific instruments, materials, etc.) and intangible (accumulated knowledge, social networks, economic rents, etc.) resources, and where output, the new knowledge, has a complex character of both tangible nature (publications, patents, conference presentations, databases, etc.) and intangible nature (tacit knowledge, consulting activity, etc.). The new knowledge production function has therefore a multi-input and multi-output character.«

The authors add that »in the context of research organizations, bibliometricians have become accustomed to define research productivity as the number of publications per researcher, distinguishing it from impact, which they measure by citations« (p. 1131). In the present study, productive research activities are those which the respondents indicated were necessary for them to be considered productive academic researchers worthy of being rewarded and promoted at their respective institutions. Such activities include publishing articles in high-ranking journals, securing external funding, participating in large multinational projects, and supervising graduate students.

Kwiek's (2018) comparative study exploring changes in the academic profession across 11 European countries classifies the characteristics of academic work into three categories: social stratification, work patterns, and research productivity. As to research productivity across different disciplines, the top academic performers were found to be around 47 years old, be involved in international collaborations, have extensive networks, and dedicate more time to research than other academic duties such as teaching or community engagement. Kwiek observed that top academic performers' extensive time investment in research can indicate a correlation of research productivity with the individual scholar's drive as opposed to institutional affiliation and influence or pressure to produce. Interestingly, in connection to this assumption, Brew et al. (2018) reported that at universities with »a high level of research activity and substantial levels of support for research, significant numbers of qualified and capable academics do not appear to engage in research, conform to the expected levels of research outputs or respond to injunctions to do so« (p. 116). These results also support the view that research productivity stems above all from the individual drive of academics.

A majority of respondents in the present study considered the following four research activities to be relevant to research productivity at their institutions: publications, ideally in high-ranking journals; securing significant external research funding; participation in large multinational projects; and supervision of master's and doctoral students. The consistent message was that it is not easy to be successful in these activities and thus be considered a productive researcher: »Top universities in the United Kingdom require staff to produce internationally significant, four-star academic papers. There is also pressure to be successful in obtaining funds for research (particularly from prestigious funding bodies like the ESRC), and to show impact of any research.« (Respondent 11, United Kingdom)

»The demands are publication in refereed journals. The emphasis on this may depend on the field of study, but it is generally an important requirement. Also, publications such as books, monographs, and so on and securing external funding are important.« (Respondent 6, Cyprus) »Getting external funding is expected but difficult due to competitiveness and limited resources. (Respondent 18, Germany)«.

A few respondents reported that publications in English are more valued at the expense of work that could have been published in national or regional languages and contribute to local communities. The value of international collaborations and co-authored journal articles or book chapters was also brought to the forefront. As one respondent stated: »At my institution associate professors (like full professors) are public employees and hence bound to ‚teaching productivity' by contract, yet with pressing demands on research productivity in terms of number of publications (the higher the better) and type of publications (e.g., publications in foreign languages are valued more than those in national languages, publications in [nationally] ranked top journals are valued more than those in other journals, book chapters or books).… Moreover, there is an increasing demand to partake in collaborative, international research projects that are externally funded.…I return[ed] to Italy after many years of working abroad, so I am used to publishing internationally and in English, which is highly valued at my institution, and I am also used to working in international research teams and hence contributing to collaborative research. This means that I potentially meet the research productivity requirements easily, but at the cost of working double the time I was used to, due to the high teaching burden. Moreover… my work is more widely acknowledged and valued abroad by the international community than in my own country (where most of my colleagues [are not] involved in collaborative research projects and activities and do not read about the results of my research if published in English).« (Respondent 1, Italy)

Factors influencing productive research activities

Forero and Moore (2016) explain that factors such as large financial investments and work dynamics have an impact on research productivity. As to work dynamics, Forero and Moore found that unnecessary and long meetings may disrupt scientific productivity, as can a lack of clear and consistent priorities. Lack of collaboration was also identified as an aspect that may limit research activities such as securing grants and international publication, although overdependence on collaborations is also not ideal because researchers must be able to lead projects and other initiatives. One factor recognized as enhancing productivity in research activities was commitment to writing articles and funding applications, regardless of the failures encountered. This statement can be validated by recognizing that every failure can serve as a valuable lesson to improve and succeed in the future.

Although the respondents in this study acknowledged the importance of institutional and collegial support, a majority spoke about factors that limit the fulfilment of productive research activities. In fact, they were unanimous in their view that time and money are the two largest factors interfering with their achieving

productive research. As one respondent succinctly stated, »time and money: same old, same old. « Other respondents echoed this by saying »we depend on our institutions and the financial support we receive; collaborations and mentorship are important, but with no money nothing can be done. There is a little money here and there but not enough for everyone«. (Respondent 5, Hungary)

One factor is the lack of dedicated time to research, as it is the teaching calendar (and related deadlines) that frames everyday academic life at my and other Italian institutions.… Those doing well in meeting productivity demands have better economic means to support their work (e.g., for attending conferences or short visits abroad for research purposes) and can gain further formal academic qualifications required for career progression. (Respondent 1, Italy) »Obtaining funding for research is very, very difficult, as all universities have had their funding cut and are all requiring staff to put in bids for research. It is next to impossible to show ‚impact' unless a researcher happens to have the ear of someone in government.« (Respondent 11, United Kingdom)

»External funding is difficult due to the competitive nature of the process. The remaining requirements are not easy but with hard work, it can be done.« (Respondent 6, Cyprus)

Another respondent added that quality research proposals that deserve funding may sometimes be rejected because of limited funds, which can lead to disappointment and discourage scholars from applying again: »Good proposals are submitted and not acknowledged.… They [are] not successful because there is only limited funding available, and not everyone can receive support for research. So, proposals get rejected, and only a few are successful.« (Respondent 14, Spain)

Other unique responses included identifying bureaucratization as a limiting factor, a lack of proofreading support, and long peer review processes. Although only two respondents brought attention to these aspects as limiting their research productivity, the scholarly literature clearly articulates these same elements as problematic (Lotriet 2012).

Reflections on the results

Overall, the data analysed reveal a substantive list of core competencies that scholars need to effectively engage in academic research. More specifically, these competencies allow them to succeed in the activities that are considered crucial for recognition as a productive academic researcher. Still, a majority of the respondents indicated that engagement in productive research activities is limited by several factors.

The number of reported core competencies is significant, reflecting the complex role played by today's academics. The ability to master all the listed competencies would indicate a desirable, even ideal, individual researcher. Achieving that capacity calls for designated spaces where novice researchers can be nurtured, and experienced researchers can engage in ongoing professional development. In fact, institutional support is crucial for effectively building research capacity. However, as reported by Fowler et al. (2009), many academic disciplines face capacity-building challenges,

particularly institutions that place a low priority on research activities.

The reported competencies can be grouped into the three categories from the APEC/Deloitte (2010) report: namely, scientific competencies (including ethical considerations), project and team management skills, and personal aptitudes and interpersonal skills. Based on the data from the present study, an additional competence that needs to be augmented is cultural sensitivity, which can be interpreted as a form of emotional intelligence. This is important because we cannot divorce emotional from logical intelligence to engage in research.

An aspect that may call for special attention from the reported competencies is the extension of international engagements. Neither international collaborations with colleagues nor participation in academic societies such as conferences is a novelty. However, engagement in scientific social networks such as ResearchGate have only recently became common. Utz and Breuer (2019) claim that professional networking is a major driver of informational benefits and closely correlated with career outcomes. Without a doubt, scientific networks can break down barriers and make knowledge more accessible, accelerate the dissemination of the newest research, increase scholar visibility, and promote the sharing of best practices (and fiascos to avoid!). We do, however, need to identify exactly which skills academic researchers need to effectively and ethically engage in this medium for scientific activity and discovery.

Based on the results reported above, prioritized productive research activities include publications in high-ranking journals, seeking external research funding, participation in large multinational projects, and supervising graduate students. The consistent message was that these activities are not easily achievable, which makes becoming and remaining a productive researcher more challenging. This message closely aligns with the scholarly literature, which shows that research productivity is not easy to achieve or measure. For instance, Altbach (2014) found that although academic productivity became popularly measured and often highly rewarded, assessing research efforts is not a straightforward process because one size does not fit all; the quality of published work differs, as do expectations within specific disciplines and the availability of financial resources and external funds.

In reference to research productivity, we need to acknowledge the potential danger of sacrificing quality for quantity, which may occur when a focus on measuring research productivity becomes dominant. This is further complicated by the lack of international agreement about standards for measuring researcher performance. As Abramo et al. (2017) explain, research productivity is measured via the quantity of tangible outputs and their impact. Another aspect worth considering is that expectations placed on academic researchers to publish and secure funding may result in unethical research practices. As Niemczyk and Rossouw (2019, p. 311) report, researchers in pursuit of tangible outputs hypothetically may (a) become co-authors, even in instances where they do not substantially contribute to a written piece, (b) produce an abundance of articles based on a modest dataset, (c) excessively use students' datasets instead of conducting their own original studies, or (d) compromise the quality of the research process – and thus output – at the expense of obtaining data in an expedited way.

Another aspect to consider is funding, which respondents described as scarce and the locus of fierce competition. There may be a need for a clear message from research directors and institutional leaders that not receiving funding does not correspond to failure; it means only that a specific undertaking was not successful at a given time, and it is essential for researchers to reapply. Commitment to research activities and not being discouraged by minor setbacks are key aspects of the quest to eventually secure external funding, although it is understandable that researchers might have moments of doubting their competence or losing confidence.

Finally, the European academic researchers expressed their views about factors influencing research productivity activities, with much emphasis on actual limitations. This can be an indicator of the pressures or even frustrations they may experience in the process of striving to be productive researchers.

Conclusion

It is important to keep in mind that higher education systems and the pace of their transformations in European countries differ because each is influenced by particular histories, cultures, national policies, and accepted research practices. Although the contexts in which respondents were situated did play a role in the nature of their scholarly efforts and research capacity, this enquiry did not elicit information on the real differences between the European countries under investigation. Future studies could consider the role played by the actual context on the academic research capacity of individual countries. There also is a need for a deeper understanding of how academic researchers cope with the growing demands for research productivity. As described by Brew et al. (2018), the role of academics is changing as the nature of research poses new demands, and there is scant empirical evidence about how academics think about their changing work and ways to meet institutional requirements.

The results of this qualitative study largely align with findings in the related literature. Without doubt, it is of utmost importance to create conditions for productive researchers to flourish, mainly through institutions and granting agencies' providing adequate financial support for research, including infrastructure, recruitment of talent, and creating effective support systems. Although scholars are expected to have self-discipline and be independent, developing an institutional culture of collegial care and research support is vital to strengthening their research capacity.

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RAZISKOVALNA SPOSOBNOST EVROPSKIH AKADEMSKIH RAZISKOVALCEV V DOBI SPREMEMB

Povzetek: Kot je razvidno iz znanstvene literature, raziskave in inovacije univerz spodbujajo gospodarstvo znanja, države po vsem svetu pa so zavezane k krepitvi raziskovalne zmogljivosti in produktivnosti akademskih institucij. Kot gonilo inovacij in izumov akademske raziskave zahtevajo kompetentne raziskovalce, ki lahko prispevajo k napredku in blaginji lokalne in svetovne družbe. Ne glede na kontekst se na akademske raziskovalce vse bolj gleda kot na proizvajalce znanja in katalizatorje družbenih sprememb. Ob spoznanju pomena raziskovalne zmogljivosti in dejstva, da raziskovalci delujejo v nenehno spreminjajočih se raziskovalnih okoljih, je ta študija raziskala produktivne raziskovalne dejavnosti in temeljne kompetence 18 evropskih akademskih raziskovalcev. Podatki za to kvalitativno študijo so bili zbrani leta 2018 prek odprtega vprašalnika, razvitega v programski opremi SurveyMonkey v oblaku. Ugotovitve so razkrile širok seznam temeljnih kompetenc, ki so predpogoj za raziskovalce, ki se želijo vključiti v učinkovite raziskovalne dejavnosti in doseči priznanje kot produktivni akademski raziskovalci. Ugotovitve so opredelile tudi več dejavnikov, ki zavirajo ali omejujejo produktivne raziskovalne dejavnosti. Rezultati te študije bodo koristen vir za široko občinstvo v akademskih skupnostih, vključno z doktorandi, raziskovalci, raziskovalnim osebjem, direktorji raziskav in univerzitetnimi voditelji.

Ključne besede: akademski raziskovalci, raziskovalna usposobljenost, preobrazbe v raziskovalnih dejavnostih, raziskovalna produktivnost, raziskovalna sposobnost, evropski kontekst

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