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Unpacking the early alumni engagement of entrepreneurship graduates

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ABSTRACT

Alumni engagement plays a crucial role in driving innovation in university-based entrepreneurship ecosystems. We employ an inductive, informant-centric research design to explore the processual dynamics surrounding the early alumni engagement of entrepreneurship graduates and how these translate into enterprising behaviors that foster technology transfer and knowledge-intensive entrepreneurship. Our inductive analysis advances the theoretical understanding of the beginning phases of the alumni engagement process among entrepreneurship graduates, the key drivers that make them gravitate toward different forms of alumni engagement, and the role and impact of their engagement in the surrounding ecosystem.

KEYWORDS

University-based entrepreneurial ecosystem; alumni engagement; enterprising behaviors

Introduction

Alumni engagement has received growing attention in entrepreneurship research as a potent resource that supports the third mission of universities by energizing knowledge-intensive entrepreneurship and fostering technology transfer (Baroncelli et al., 2022; Belitski & Heron, 2017; Berggren, 2017). Graduates from entrepreneurship education are critical players in such efforts (Breznitz & Zhang, 2022; Lackeus & Williams Middleton, 2015). In particular, entrepreneurship education enhances the enterprising spirit of graduates by facilitating the formation of positive beliefs for engaging in entrepreneurial careers (Galloway & Brown, 2002; Lange et al., 2014; Piperopoulos & Dimov, 2015; Saeed et al., 2013), and encouraging practices that promote entrepreneurship and innovation in and around the university (Belitski & Heron, 2017; Nabi et al., 2017). In addition, many entrepreneurship graduates continue to relate to their university throughout their careers, thus providing their alma mater with valuable resources and networks connected to financing, legitimacy and knowledge, educational and social events, and philanthropic donations (Matlay, 2009; Spigel & Harrison, 2017). As such, their alumni

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engagement feeds resources into the ecosystem and vice versa, typically to the advantage of both.

In this study, we focus on the beginning phases of the alumni engagement process among entrepreneurship graduates. Research suggests that early formative experiences in the relationship with the university play a key role in subsequent alumni engagement over the career (for example, Gaier, 2005; Gallo, 2012; McAlexander & Koenig, 2001). However, research on entrepreneurship graduates has overlooked the transition process where their initial contact with the university develops into meaningful and longer-lasting alumni relationships that strengthen and vitalize the institution's third mission (Berggren, 2017). In this respect, theory and research on the critical beginning phases of the alumni engagement process of entrepreneurship graduates have been left largely unnoticed in the literature.

Taking this focus as our point of departure, we identify two oversights in extant literature that pose a challenge for advancing theory and research on the beginning phases of the alumni engagement process of entrepreneurship graduates. First, literature on university-based entrepreneurship ecosystems typically lumps alumni together as a largely homogenous group of actors irrespective of study background (for example, Antal et al., 2014; Belitski & Heron, 2017; Miller & Acs, 2017). In particular, alumni often receive somewhat of an "empty suit" treatment, with seemingly congruent interests and motivations regardless of educational context (Baroncelli et al., 2022). This predicate assumption has led to limited research on the particularities and specificities that characterize and influence the action-oriented alumni behavior of entrepreneurship graduates.

Second, literature on entrepreneurship and innovation activities of alumni fails to sufficiently incorporate the heterogeneity of contexts and outcomes that abound in the larger literature on student and graduate entrepreneurship (for example, Clarysse et al., 2022). Much of the focus has been on alumni involvement in enterprise formation (Breznitz & Zhang, 2022; Breznitz et al., 2019; Eesley et al., 2016). However, although entrepreneurship students may create and run a company after graduation, the surrounding ecosystem offers multiple and varied career opportunities (Meyer et al., 2020), including self-employment, intrapreneurship, hybrid entrepreneurship, and working with business support for new and small businesses (Alsos et al., 2022; Burton et al., 2016). Adding to this, the early period after graduation are changeful times that may include shorter internships as well as project-based and part-time work, depending on personal career preferences and motivations. Hence, there is a recognized need for research exploring how the early alumni engagement of entrepreneurship graduates is framed and shaped by the interplay between their often-varied work-related enterprising activities and the ecosystem in which these are carried out.

Taking these observations as our point of departure, we pose the following research question: *How do graduates from entrepreneurship education become engaged as alumni in university-based entrepreneurship ecosystems?* To advance current theory and research, we focus on the processual dynamics surrounding graduates' early engagement as alumni and how this engagement translates into enterprising behaviors that foster innovation and new economic activities. We adopt an inductive, informant-centric research design to tap into how entrepreneurship graduates experience the process of becoming engaged within the ecosystem and how they "live" the transition from students to graduates.

Our study makes three significant contributions. First, we advance the literature by identifying the microindividual enterprising actions of recent entrepreneurship graduates and the multiple ways they engage as alumni in the beginning phases of the process. Second, we offer a process-focused lens that delineates alumni engagement as a dynamic form of institutionally embedded behavior that develops over time depending on entrepreneurship graduates' work situations and career trajectory. Third, and building on these process-focused insights, our theorizing provides a better understanding of how different forms of alumni engagement collectively contribute to the efficacy and viability of university-based entrepreneurship ecosystems.

The rest of this article is structured as follows. The next section presents our theoretical framework. After that, we offer the context, the informants, and the collection and analysis of the data. Then follows the inductive analysis, where we outline the initial stages of the alumni engagement process, the key drivers that make the entrepreneurship graduates gravitate toward different forms of engagement, and the system-wide impact of their alumni engagement. Finally, we discuss implications, limitations, and suggestions for future research.

University-based entrepreneurship ecosystems

Recent decades have accentuated the societal expectations on universities to contribute to broader social and economic benefits through teaching, research, and technology transfer. For example, universities have ascribed the role of boundary-spanning "innovation hubs" that can act as engines for regional development by creating and disseminating new knowledge while contributing to skills supply and entrepreneurial learning in regional economies (Miller & Acs, 2017; Youtie & Shapira, 2008). In this respect, an essential function of universities is to provide highly skilled and specialized talent in the form of graduates who can serve as primary entrepreneurial agents for productive entrepreneurship and innovation (Foss & Gibson, 2015; Hayter et al., 2016).

Universities' mission is to engage in job and wealth creation in society. As such, university-based entrepreneurship ecosystems offer benefits and resources that encourage prospective entrepreneurs, such as graduates and others, to engage in starting, funding, and assisting potential high-impact ventures (for example, Brush, 2014; Fetters et al., 2010; Hayter, 2016; Rice et al., 2014; Siegel & Wright, 2015). The entrepreneurship ecosystem is produced by a cohesive community of entrepreneurs with a supporting infrastructure that helps new high-growth ventures form, survive, and expand (Spigel & Harrison, 2017). The supporting infrastructure encompasses various intermediary organizations that assist prospective entrepreneurs, accentuate knowledge flows, accelerate technology commercialization, and support the creation of innovative startups.

Entrepreneurship graduates

Entrepreneurship education has become a central feature in university-based entrepreneurship ecosystems (Brush, 2014; Meyer et al., 2020). Broadly, such efforts include curriculum-based courses and programs (Hägg & Gabrielsson, 2020) and extracurricular activities offered by student clubs, startup programs incubators, and accelerators (Metcalf et al., 2020; Pocek et al., 2021). By engaging students in deliberate practice in close collaboration with ecosystem actors, entrepreneurship education immerses students in the startup world through enterprise-oriented training and campus-based outreach activities (Antal et al., 2014; Meyer et al., 2020). In this respect, entrepreneurship education provides a nexus for experiential competence development that collectively focuses a university's efforts to support the enterprising spirit and employability of its students and improve the institutional framework of knowledge commercialization in the ecosystem surrounding the university (Belitski & Heron, 2017; Bolzani & Luppi, 2020; Brush, 2014).

Extant research suggests that entrepreneurship graduates play a critical and catalytic role in university-based entrepreneurship ecosystems (Boh et al., 2016; Hayter, 2016; Hayter et al., 2016; Lubynsky, 2012). The peer learning and social network building that characterize entrepreneurship education familiarize students with the formal and informal rules of the local ecosystem culture (Autio et al., 2014; Wright et al., 2017). In this respect, entrepreneurship graduates are more likely to engage in venture creation than other graduates (Breznitz & Zhang, 2022) and faculty (Åsterbro et al., 2012). Moreover, while students typically move away from campus to pursue a career after graduation, entrepreneurship graduates often continue to develop their ventures close to the university because of their familiarity with the local ecosystem (Larsson et al., 2017; Wright et al., 2017). In fact, accessing resources in and around the university is one of the most critical elements for the success of startups founded by graduates (Hayter et al., 2016; Matt & Schaeffer, 2018).

Alumni engagement of entrepreneurship graduates

Alumni refer to former students who have graduated, but maintain linkages with the university where they have been educated. Alumni engagement opens for accessing and maintaining collaborating networks of peers connected with the university over the career (Baroncelli et al., 2022). The benefits relate to opportunities to attend social events, receive career support and professional development, as well as access to campus facilities and services. At the same time, alumni engagement allows graduates to support their alma mater by serving as ambassadors for higher education programs and contributing with resources that support the advancement and growth of the university's teaching, research, and technology transfer missions.

Previous studies on alumni engagement have predominantly focused on understanding and predicting the motivations and characteristics of fundraising behaviors (e.g., Gallo, 2012; Weerts & Ronca, 2009), a trend primarily driven by the increasing number of universities that rely on private support to keep their programs competitive (Breznitz et al., 2019). More recently, there has been a growing interest in alumni engagement as a vital component of university-based entrepreneurship ecosystems (Baroncelli et al., 2022). Specifically, former students have been found to contribute with alumni engagement support such as the provision of specialist business knowledge, serving as mentors to prospective entrepreneurs (Crisp & Cruz, 2009; Eesley & Wang, 2017; Nabi et al., 2021), and helping peers access networks of potential customers, distributors, and investors (Meyer et al., 2020; Perren, 2003).

In our study, we seek to understand how entrepreneurship graduates become engaged as alumni in university-based ecosystems. Considering our theoretical overview, we conclude that their role in supporting the university's research and teaching missions, as well as the third mission related to technology transfer and science commercialization, is increasingly acknowledged in the literature (for example, Baroncelli et al., 2022; Berggren, 2017). At the same time, alumni engagement is not instantaneously produced after graduation, but is an ongoing process that evolves over time (e.g., Gallo, 2012). In this respect, we need to ask: What are the central features of the beginning phases of alumni engagement among entrepreneurship graduates? How do circumstances and the people around them set the stage and initiate the alumni engagement process? Unfortunately, the literature is so far scarce on these issues.

We can identify two core tenets that can guide our initial theorizing. First, at a basic level, we acknowledge that the microindividual actions of graduates are key elements in the early alumni engagement process. Extant research suggests that entrepreneurship education enhances the enterprising spirit of graduates by facilitating the formation of positive beliefs for engaging in entrepreneurial careers and encouraging practices oriented to promote entrepreneurship and

innovation in and around the university (Belitski & Heron, 2017; Breznitz & Zhang, 2022; Nabi et al., 2017). Thus, recent entrepreneurship graduates can be expected to actively pursue and seize opportunities for networking and capacity building that benefit their entrepreneurial careers (for example, Haneberg & Aaboen, 2020; Longva, 2021), which may translate into alumni engagement behaviors in the university-based entrepreneurship ecosystem.

Second, our theorizing needs to acknowledge that alumni engagement results from microindividual actions and institutions impacting one another within a given ecosystem context (for example, Miller & Acs, 2017). University-based entrepreneurship ecosystems offer multiple career opportunities for graduates who seek to promote entrepreneurship and innovation in and around the university (Meyer et al., 2020). Entrepreneurship education prepares students not only to become self-employed, but also to pursue entrepreneurship and innovation as employees or exhibit enterprising behavior in other ways (Alsos et al., 2022; Gibb, 2002). Thus, entrepreneurship graduates can be expected to show differences in their alumni engagement behaviors depending on a dynamic interplay between early career choices and the macroinstitutional contingencies of the surrounding ecosystem (for example, Alsos et al., 2022).

Methods

Context of the study

The research setting is the entrepreneurship ecosystem of Lund University, located in the Greater Copenhagen area, which is a metropolitan region comprising eastern Denmark and southern Sweden. The ecosystem surrounding the university consists of a rich set of interdependent actors and organizations coordinated to enable productive entrepreneurship within the territory such as incubators, science parks, various faculties and programs, technology transfer offices, public-private partnerships that work in support of venture growth, central and local government, and the private sector and financial capital actors. The ecosystem benefits from the presence of traditional connections to large multinationals such as Ericsson, Sony, Tetra Pak, and IKEA. Two large science parks are also connected to Lund University. Ideon Science Park is one of the oldest science parks in Europe, which was built in 1983 to enhance collaboration between academia and the private sector. Medicon Village is a recent science park created in 2012 as a hub for entrepreneurship and innovation in life science.

A focal point in the entrepreneurship ecosystem of Lund University is the curriculum-based entrepreneurship courses and programs coordinated by one of its faculties, the School of Economics and Management. The flagship is an advanced-level, international one-year entrepreneurship program, open to

students with a bachelor's degree in any subject, where they are offered the opportunity to be fully involved as entrepreneurs in the startup process. Embedded in experiential and action-oriented learning pedagogies (for example, Hägg & Gabrielsson, 2020; Mandel & Noyes, 2016), the program connects students with mentors from companies in the region, including successful ventures and spin-offs from Lund University. Students are also offered multiple opportunities to participate in pitch and business plan competitions organized by the program in collaboration with support actors in the university-based ecosystem such as the technology transfer office, incubators, and investors. Since its inception in 2007, the venture creation program has produced about 500 entrepreneurship graduates and is today one of the most popular programs at Lund University.

Our choice of empirical setting for the study was motivated as follows. First, Lund University, with its long history of supporting innovation and venture creation initiatives (Benneworth et al., 2009; Bischoff, 2017; Pocek, 2022), closely resembles the concept of an entrepreneurship education ecosystem (for example, Brush, 2014). Second, our close connection to faculty and the local ecosystem surrounding the entrepreneurship courses and programs at Lund University provided unique access to rich data about the early alumni engagement of entrepreneurship graduates, including their student period and continuing beyond graduation.

Context is a fundamental information resource that improves a researcher's understanding of activities, relationships, and actors' thinking. As Glaser and Strauss (1967) suggested, insights and theoretical sensitivity are the main components of the social scientist armory (p. 46). Therefore, knowledge of context becomes a key aspect in collecting data from and interacting with informants.

Research design and selection of informants

In this study, we employed an inductive, informant-centric research design to explore the early alumni engagement of entrepreneurship graduates in university-based entrepreneurship ecosystems. We followed a purposeful sampling strategy to identify and select informants who could provide information-rich insights (Patton, 2002, p. 230). The informants were identified from a list of all graduates from the venture creation program, based on the following criteria: (a) at least one calendar year since graduation; (b) engaged in the entrepreneurship ecosystem either through owning and running their firms, working with developing new business opportunities in corporations, or working with business support as a coach, adviser, or investor in startups; and (c) living and working in the Greater Copenhagen area.

Based on these criteria, we approached 30 potential candidates, of whom 18 responded positively to the invitation to participate in our study. The

informants consisted of 13 male and 5 female graduates. Their current employment status varied and included many self-employed individuals, but also employees working with business support and employees in larger companies who work with business development projects and new and small companies. However, they all had prior experience with the functions, activities, and actions associated with perceiving business opportunities and creating organizations to pursue them. In addition, their work experience came from diverse industries, including food and beverage, automotive, life science, management consulting, gaming, and information technology, to mention a few. A detailed summary of the 18 informants is presented in [Appendix A](#).

Data collection

We conducted 26 face-to-face interviews with all 18 informants lasting 50–60 minutes each. Initially, we constructed a tentative semistructured interview guide based on prior work in the area. Next, the research team discussed the interview guide, followed by two separate pilot interviews. The pilot interviews helped us understand how to link more general theoretical concepts to the context surrounding graduates' ecosystem engagement and how to pose questions that triggered perceptions about events that occurred at different points in time. As a result, the interview guide was revised after the pilot interviews.

All interviews followed a similar protocol. The semistructured character of the interview guide helped to focus the conversations on graduates' engagement in the ecosystem while at the same time allowing for free-flowing discussions and expansions on topics led by the informants. This enabled us to explore actions undertaken by the graduates in the entrepreneurship ecosystem and unpack drivers for their alumni engagement. To reduce the risk of retrospective sensemaking, which may distort underlying motives for actions and beliefs (Golden, 1992), we cross-checked the information retrieved from the interviews with available secondary data, including their curriculum vitae and "statement of purpose" submitted when applying to study in the program. In addition, we collected data about the graduates' career trajectories via LinkedIn.

The questions covered four key themes: (a) The first theme of questions aimed at understanding their career intentions and the background, origin, and emergence of their business idea. (b) The second theme explored their engagement with the ecosystem and what entrepreneurial activities they took to pursue their business idea. (c) The third theme aimed at understanding the network they built and the people they connected with to support the development of their business idea. (d) Finally, the fourth theme discussed graduates' perception of their ecosystem and how they sustain their relationships and contribute back to their ecosystem over time.

We conducted a second round of interviews with selected informants to pick up on interesting themes and patterns noticed in round one. For instance, we observed some interesting patterns related to the situation and career trajectory of the informants. These patterns were later aggregated as key drivers of graduates' alumni engagement in the ecosystem. We also complemented the interviews by collecting secondary data relevant to our research.

Data coding and analysis

In line with inductive research recommendations (Gioia et al., 2012), our data analysis evolved through a series of iterative steps, moving from first-order coding (initiated by an informant-centric analysis of graduates' engagement) toward a more abstract level (seeking to develop a theory-laden understanding of the graduates' engagement with the ecosystem). In line with our grounded approach, we emphasized placing observations and findings in a social and temporal context when analyzing the data.

First-order coding: Initiating an informant-centric analysis of graduates' engagement

The initial analysis stage involved an open coding of interviews and archival data (for example, student motivation letters), where we used the NVivo software to assist the data analysis. The empirical material was initially scanned and classified independently by the first two authors to inductively code and categorize emerging aspects. In this process, several codes were identified as engagement efforts. By *engagement*, we mean temporally bounded instances where graduates work collaboratively with and through groups of people affiliated by geographic proximity. In this process, several codes were identified that represented different engagement efforts. We also used temporal bracketing (Langley, 1999), tracking when, how, and why different engagement efforts took place. For instance, when did the informant begin their engagement efforts (for example, during or after graduating from the program), who did they engage with, what was the purpose of engagement, and what were the engagement outcomes? The temporal perspective allowed us to understand how different alumni engagement efforts emerged and took place along a time continuum (for example, Langley et al., 2013). This was an iterative process through which patterns of different engagement forms were identified and grouped.

Second-order coding: Developing an abstract model

The purpose of the second-order coding was to create an abstract understanding of our empirical observations, mainly represented by the different

forms of engagement. In this step, the first-order concepts were reduced to a manageable number, consisting of recurrent phrasal descriptors. This process provided the basis for a researcher-centric second-order analysis where we identified theoretical themes and tentative relationships. For instance, our first-order codes specified variations in graduates' engagement, which we conceptually categorized as forms of engagement. Moreover, each form of engagement served a specific element. Initial forms of engagement, for instance, were categorized as cognitive, whereby graduates sought to explore, understand, and make sense of their surroundings. Other forms of engagement were categorized as conative; that is, they served a strategic purpose with clear goals and orientations toward targeted action. Finally, other forms of engagement were categorized as affective, through which graduates worked collaboratively with others to maintain feelings of commitment, belongingness, and pride. Conceptually, we refer to these elements as *functions of engagement*.

Moreover, we used our first-order codes to categorize graduates' engagement efforts into two different roles: taking and giving. For instance, when graduates began their engagement with their ecosystem as mentees during their time at the program, they assumed a taking role. However, when investing time in mentoring other incoming student entrepreneurs, graduates assume a giving role. We understood how different engagement efforts and their categories help the ecosystem evolve and regenerate itself in an autopoiesis manner by taking this perspective. Our first-order empirical observations also indicated different drivers that underlined graduates' commitment to specific forms of engagement. We conceptually refer to these as *drivers of alumni engagement*.

Finally, we organized our first-order concepts and second-order themes in connection with extant theory, which we depict in the data structure as aggregated dimensions. At this point, guided by recommendations in Gioia et al. (2012) we kept close to the literature with a confirmatory/disconformity purpose to focus on novel insights aimed at extending the existing literature. The final data structure emerging from our inductive analysis is demonstrated in [Figure 1](#).

Findings and analysis

The findings that emerge from the interviews with the informants are described in the following sections. We employed our inductive, informant-centric analysis to explore the early phases of alumni engagement among entrepreneurship graduates and the specificities and potential heterogeneity underlying this process.

Forms of alumni engagement

The beginning phases of the alumni engagement process took multiple forms. The emerging data structures (see [Figure 1](#)) highlighted three different forms

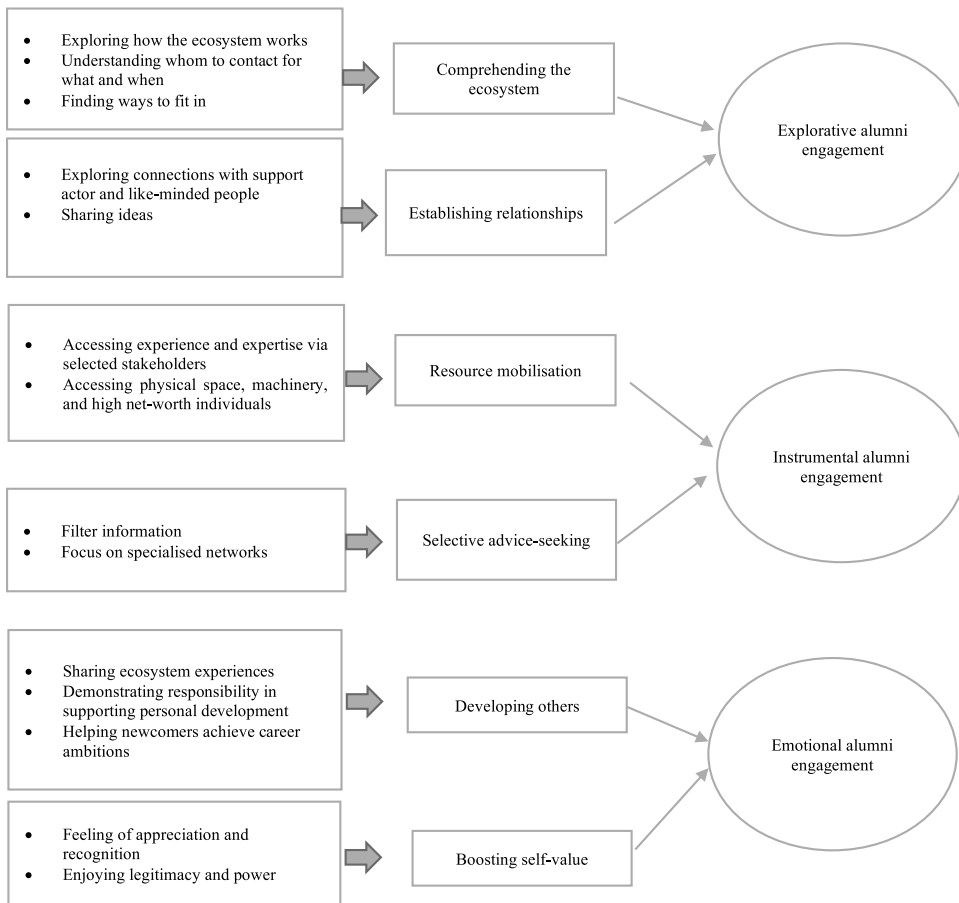


Figure 1. Data structures for explorative, instrumental, and emotional alumni engagement.

of engagement that enable entrepreneurship graduates to transition from students to engaged alumni in university-based ecosystems: explorative engagement, instrumental engagement, and emotional engagement. These aggregate dimensions formed the foundation of our emerging framework. We discuss the findings related to each form of alumni engagement below.

Explorative alumni engagement

Graduates referred to their initial alumni engagement in the ecosystem as highly explorative. This form of engagement was typically perceived as a catalyst for understanding and grasping the overall structure and function of the ecosystem. This knowledge base, in turn, influences the judgment and reasoning of graduates when it comes to making sense of the ecosystem and identifying and pursuing entrepreneurial opportunities. In this respect, cognition is the dominant component of this form of alumni engagement, which concerns graduates' thought-related processes and mechanisms. Below we discuss two second-order

themes in our data that underlie explorative alumni engagement: (a) comprehending the ecosystem and (b) establishing relationships.

Comprehending the ecosystem. The informants emphasized the need to know more about the setup of the surrounding ecosystem to understand the different ecosystem components, but also the overall infrastructure; that is, how things “work.” In this respect, graduates engaged with the ecosystem by identifying and connecting key stakeholders and startup communities, their interrelations, and where, how, and when to contact them. This process of acquiring experiential knowledge was essential for developing their capacity to make informed decisions about their entrepreneurial careers. Our informants also mentioned that early on, different networks around the ecosystem helped them better understand the possibilities for accessing a range of key actors and stakeholders. One of the informants exemplifies the understanding of this aspect of the ecosystem as follows:

I think networking is key to getting a foot in the door . . . the system is built and relies so much on personal networks and relationships, so it is essential to get to understand how it works and when to contact key people.

Moreover, the informants emphasized the importance of finding ways to fit into the ecosystem. They suggested that meeting different expectations in the ecosystem and coming to terms with the key attributes and values that govern the ecosystem were essential for establishing themselves as legitimate actors. One informant referred to this as an “entrepreneurial lingo” or culture characterizing the startup community to which he had to adapt to benefit from the entrepreneurial ecosystem:

There are things that you are expected to do and ways you are expected to look, and things you are expected to say to kind of fit into the group, the startup group. It is the whole entrepreneurial lingo or the culture.

Establishing relationships. The informants also highlighted the establishment of relationships as being an essential constituent of explorative engagement. Usually, these relationships were described as equally beneficial for all involved parties. The informants suggested that through such relationships, they were able to connect with support actors and like-minded people; that is, people with whom they could share similar entrepreneurial interests, goals, and visions, as well as share and receive feedback on their business ideas. One informant stated:

There is a strong community here, so you go there to meet people and catch up and see what is happening . . . So I decided to go to specific tradeshows, where I got the chance to pitch, and the aim here is to develop strong relations with like-minded people who could contribute to the idea and possibly become partners.

Adding to this, exploring possibilities for establishing relationships is necessary for graduates to gain a first step into the community that makes up the ecosystem. Several informants emphasized that knowing the right people early in the process is key since these networks offer essential connections that can open up new opportunities. This was described by one informant as follows:

It [the ecosystem] is built around exploring personal networks and relationships; it's the number one thing. It's people putting in a good word for you; it's people who are happy to recommend you to other people. It's people who are happy to share opportunities with you . . . So, it is a bit of an exchange or maybe a mutual exchange of different kinds of people.

Many informants expressed that they were socialized into explorative engagement activities already during entrepreneurship education. These practices then continue as they seek to develop their understanding of different ecosystem components. Following graduation, many informants persisted in building relationships, where they upheld contacts with faculty and connected with incoming students. This “reactivation” of explorative engagement acted as a catalyst for graduates to learn more about the latest entrepreneurial trends and for exploring different views on what they and others were doing. For instance, some graduates highlighted that openness in sharing and receiving new ideas and perspectives was necessary to rejuvenate their views on entrepreneurial opportunities. In this respect, explorative engagement can be seen as an experiential learning process that occurs in close interaction with students and other actors in the ecosystem.

One way to reactivate their explorative engagement was by serving as mentors for new students, which created opportunities for mutual learning among graduates and student entrepreneurs. This opened up opportunities to share their experiences and benefit from new ideas brought up by new student projects. Two informants elaborated on this:

I became a mentor for student entrepreneurs as I think I can learn a lot from them, especially when they build up business projects. I think the learning is mutual. I share with them what I have learnt during my journey and at the same time, reflect and receive new input on my ideas.

I kept in close contact with people at the center to learn about different gaming events taking place and took part in those events as a speaker but also to get some new insights about new trends, which can help me keep my business up-to-date.

In all, our analysis suggests that explorative alumni engagement features both giving and taking when entrepreneurship graduates interact with the ecosystem community in the initial stages of the alumni engagement process. Entrepreneurship graduates engage in taking by exploiting networks and contacts while searching and making sense of the ecosystem. Giving is manifested when they build relationships and share their experiences and insights

with other ecosystem actors such as entrepreneurship students. The taking and giving that characterize explorative alumni engagement thus support the circular flow of information in the community, which strengthens local conditions for knowledge accumulation and capacity building in the ecosystem.

Instrumental alumni engagement

Instrumental alumni engagement is where graduates focus on channeling and leveraging different resources to facilitate venture creation and business development. This form of alumni engagement can be described as strategic and goal-oriented activities with the aim of accessing and exploiting ecosystem resources. The dominant component constituting this form of engagement is conation, as it relates to the graduates' instinct and inclination to act purposefully and consciously to benefit career or project goals. Two second-order themes in our data underlie graduates' instrumental alumni engagement: (a) resource mobilization and (b) selective advice seeking (see [Figure 1](#)).

Resource mobilization. Our informants mentioned the benefits of targeting specific networks where they could mobilize and exploit specific resources that enable them to advance in their entrepreneurial careers. This included human resources in terms of gaining access to domain-specific experience and expertise, as well as tangible resources in terms of gaining access to physical spaces, machinery, and high-net-worth individuals who can provide financial resources. In addition, graduates emphasized that their participation in various entrepreneurship events served as a valuable channel to communicate, test, and receive relevant feedback on their businesses. This appreciation of entrepreneurship events was expressed by one of the informants:

You have different platforms that allow you to test every piece of your business, like pitching events, and competitions and feedback sessions.

The informants also emphasized the importance of attending industry-specific networking events. These networking events were considered valuable arenas for meeting domain-specific stakeholders who could share their experiences and expertise on the latest industry trends, offer rich insights into their business ideas, and in some cases, potentially participate in their businesses as partners. For some graduates, their engagement with the university ecosystem offered access to specific expertise they would not have gained elsewhere. For example, one informant in the biotechnology area suggested that working close to the ecosystem was imperative to access people with specific expertise who could share the latest biotechnology research. She elaborated on this advantage in the following way:

Lund is known for biotechnology research, and the division here provides an inspiring environment where scientific work and practice go hand in hand.

Similar reasoning was highlighted by another informant who explained that working closely with the engineering department at the university was instrumental in obtaining technical drawings and developing an installation guide for their product. In addition, their interaction with the fire safety engineering department was essential for verifying the acoustic absorption rating of their products. Engaging with knowledge-specific networks around the university ecosystem was considered to be necessary for channeling technical experiences to produce the product, which one of the informants explained as follows:

There are significant engineering resources around here, and many engineers want to try things out. So, we benefited from their expertise in developing our product. We co-created things and ensured being continuously in touch with them.

The informants emphasized that access to tangible resources, such as labs, machines, and office spaces, was highly important as they facilitated their ventures' development. This was particularly evident among graduates who developed entrepreneurial opportunities based on knowledge from university research. They suggested that operating close to the university offered them a unique chance to make use of all facilities available in the ecosystem, thus enabling product development that otherwise would have been difficult to pursue. This was explained by one of the informants:

We are a research and development company specialized in bed bugs. Being around here offered us access to different machines and labs where we run our tests . . . As a biotech company, we need labs. And that is why we are situated here in the medical village.

Our analysis also showed a strong engagement pattern in online platforms and networking events to convince high-net-worth individuals to provide seed funds or acceleration investments. The informants described this engagement as a proactive and goal-oriented act where they could reach out to local investors and acceleration programs to gain access to venture capital or angel investment financial resources. For example, one of the informants explained this engagement with the following argument:

We went out and had a first investment round, and we checked online to see who are the wealthiest guys in the region and sent them a letter in the mail inviting them to our office at Ideon at the time.

Selective advice seeking. Another component of instrumental alumni engagement identified in the data was *selective advice seeking*. It refers to graduates' orientation toward being more discerning when seeking advice from different networks within the ecosystem. In this respect, the informants mentioned the need for becoming selective in targeting more specialized networks when championing venture projects, which allows for the exchange of experiences with like-minded people and gaining traction in their projects.

Selectively seeking networks was necessary to help them access information and specialized knowledge. They considered this form of more strategic, goal-oriented behavior necessary in opening up opportunities for creating strong links to specialized networks to receive the most valuable advice. It also enables graduates to exploit and refine the ecosystem resources purposefully when engaging with this component, so as to fit project or career goals. The need to scrutinize information to be selective in seeking advice within the entrepreneurship ecosystem was expressed by one of the informants as follows:

One of the main challenges for startups is to kind of filter all the advice they get. Often, they have two, three, or four business coaches and mentors . . . and then they go to workshops, get advice, are kind of over-advised, and handle it in different ways . . . It is an issue for many entrepreneurs if they get advice from so many, and everyone will say different things to them.

In all, our analysis suggests that instrumental alumni engagement encompasses both giving and taking as entrepreneurship graduates interact with the ecosystem community in the initial stages of the alumni engagement process. Instrumental alumni engagement encompasses taking behaviors where entrepreneurship graduates access and use specific knowledge and expertise to develop prototypes, test their products, and pursue their business ideas. On the other hand, graduates also lead to giving behaviors as a product of their self-determined enterprising actions, which focus and recombine productive resources, such as human capital, skills, and social networks, around new business opportunities in the ecosystem. In this respect, the giving and taking that characterize instrumental alumni engagement support developing and scaling up innovative venture projects in the entrepreneurship ecosystem.

Emotional alumni engagement

Our analysis identified a third form of engagement, which we refer to as *emotional alumni engagement*. This form of engagement was supply driven, means oriented, and community focused. In contrast to instrumental engagement, emotional engagement was fueled by the basic human need to affiliate with and be accepted by group members. The dominant component constituting this form of alumni engagement is affection, where they sustained meaningful commitment to supporting others and gained a personal appreciation of its value for their individual development. The analysis identified two second-order themes in the data that underlie emotional alumni engagement: (a) developing others and (b) boosting self-value (see [Figure 1](#)).

Developing others

Following graduation, the informants started to think about the experiences they had accumulated during their studies and recognized opportunities for

sharing their ecosystem experience with newcomers such as new student entrepreneurs. This form of engagement could involve graduates as mentors or coaches to help others identify business opportunities, sharpen their business models, or determine critical business-related skills. The informants suggested that their emotional alumni engagement resulted from their feeling responsible for supporting others' personal development and progress, claiming this will positively affect their ability to achieve their career ambitions. One of the informants suggested that this form of commitment was inspiring, as it provided a chance to share one's own experiences with others and gain a personal appreciation of its value. She explained this engagement as follows:

I really like people and like to help others and entrepreneurs as it strengthens them as persons, and I have experience working in the support system, so I could contribute with some thoughts about the different actors and the contacts people could develop.

Several of the graduates attended student-targeted networking events regularly to help student entrepreneurs navigate the entrepreneurship ecosystem and pass on information about the different actors and stakeholders they could approach to help them develop the necessary skills to pursue a career in entrepreneurship. One of the informants explained this commitment as follows:

I talk to newcomers about my experiences and highlight specific behaviors that bring success. I actually have a tendency to always meet one or two at some point or another, perhaps facilitated through some networking events that are intended for new students.

Developing others is about guiding new and prospective entrepreneurs by assisting them in refining their business ideas and helping them to achieve their career ambitions, something an informant elaborates on in the following statement:

I worked with students to see how their business ideas can be refined and be ready to go out to the world and be commercially viable.

Boosting self-value

In addition to developing others, emotional alumni engagement is fueled by graduates' feeling of increased self-value. Graduates highlighted that being embedded in a community of entrepreneurial practice allowed them to share knowledge and experiences, which increased their legitimacy and power and triggered the sense of being recognized and appreciated by new students and the entrepreneurial community at large. One informant explained this dual appreciation by stating the following:

I try to stay in touch and kind of keep an eye on who's coming in and what people are working on and try to help them to the best of my capabilities, but I also think

newcomers are a source of inspiration and they renew my energy and view on how I could be more innovative in developing our support system.

In this way, emotional engagement emerges as a means for graduates to connect back with their alma mater, not only for the sake of affectionate feelings and the joy of sharing experiences with incoming students through connecting back, but also as a way to remain visible and up-to-date that keeps them self-motivated as well as appreciated by others.

In all, our analysis suggests that emotional alumni engagement shares double-sided features

when entrepreneurship graduates interact with the ecosystem community in the initial stages of the alumni engagement process. Entrepreneurship graduates engage in taking behaviors by using the ecosystem to build and affirm their own identity and self-efficacy. Giving behaviors are manifested when they serve as sources of inspiration and encouragement for others. Collectively, the interaction between taking and giving in emotional alumni engagement support graduates' gradual development of legitimacy, influence, and social status while, at the same time, strengthening and reinforcing altruistic values in the ecosystem.

Key drivers of alumni engagement

Following the structuring and sequencing of activities in light of the experiences and interpretations of the informants, we identify the drivers that make graduates gravitate toward specific forms of alumni engagement. A detailed structure of these drivers and their second-order themes are presented in Appendix B.

Drivers of explorative alumni engagement

A key driver of explorative alumni engagement is the “proactive search” practiced by entrepreneurship graduates, which emanates from their open-ended acquisition of knowledge to make sense of what is happening around them. The search is composed of specific discovery activities where graduates take the initiative in searching the entrepreneurship ecosystem, which supports them in investigating, evaluating, comparing, and synthesizing information about various collaborative events such as trade fairs, pitching events, and business plan competitions (for example, Meyer et al., 2020). Graduates use the information to navigate different system events that could benefit their venture projects and entrepreneurial careers, increasing the chance of meeting and interacting with different system actors. One informant expressed engaging in proactive search activities in the following way:

I was excited to open different doors and discuss my options with different members of the system . . . therefore I started to explore different networking events, mainly those organized by support actors.

Interestingly, the search activities associated with explorative alumni engagement were not new for the graduates. Instead, our analysis suggests that similar search activities were practiced during their time as students. Soon after enrolling in the entrepreneurship program, students began to search for system events, which were encouraged by faculty and mentors during their studies. For instance, one of the informants described the early involvement in proactive search as follows:

From the beginning [of the venture creation program], I was eager to start my own business; I participated in automotive trade shows, showed up at different events to present different concepts, and spoke to people at like twenty different events, doing public speaking to explore things.

In this respect, the proactive search that fuels explorative alumni engagement after graduation can be connected back to the experiential and action-oriented pedagogy of the entrepreneurship program, where students are encouraged to develop networks and “test the waters” in collaboration with ecosystem actors such as academics, investors, and practitioners (for example, Lackéus & Williams Middleton, 2015; Ollila & Williams-Middleton, 2011). Practicing search is critical in becoming entrepreneurial in thought and action (for example, Schlesinger et al., 2012), and the students continuously process information to navigate the ecosystem and put their aspirations and career goals within a broader ecosystem perspective.

Following this general trajectory, most informants were highly involved in explorative alumni engagement in the early period after graduating from the program. However, the search intensity is significantly reduced as graduates build their experiential knowledge base about fundamental ecosystem elements. Instead, they become more selective in evaluating and selecting different ecosystem niches that fit current interests and career aspirations. One informant described this intentional self-selection as follows:

I wanted to learn how to be part of an ecosystem to contribute to the entrepreneurial spirit and be part of something where I do not go back to a regular nine-to-five job. So, I explored different events around the university, and then I realized that I needed to be more focused on meeting support organizations like Connect, Ideon, and Minc.

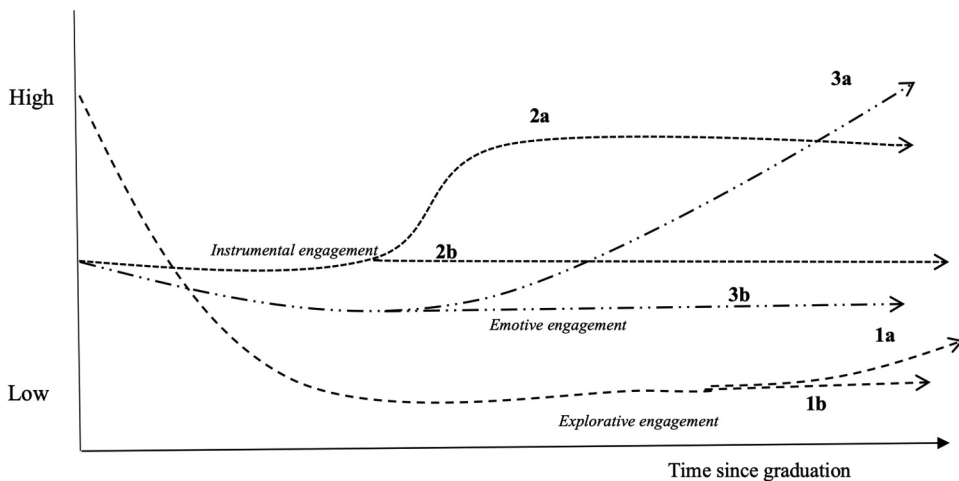
To conclude, explorative alumni engagement is high in the early period after graduation. However, this form of engagement decreases in intensity as the graduates learn the particularities of the ecosystem. This enables them to reduce open-ended search efforts aimed at knowledge discovery and contextual insights to focus their cognition instead. In a few instances, some graduates engage in projects that require them to venture outside known domains, thus intensifying their search efforts and temporarily increasing explorative alumni engagement (see path 1a in [Figure 2](#)). However, in most cases, explorative alumni engagement is reduced to a much lower level, where

graduates become increasingly precise regarding understanding the locality of their entrepreneurial goals and continuing within their niches (see path 1b in Figure 2). In this respect, the graduates' cognitive frame of "knowns" governs the intensity of proactive search efforts that subsequently drive explorative alumni engagement.

Drivers of instrumental alumni engagement

The second set of key drivers comprises "competence compatibility" and "location advantages," which make graduates gravitate toward instrumental alumni engagement. These drivers emanate from the strategic goal-oriented action involved when graduates engage in venture projects. The venture projects are often self-initiated, but can also be championed by organizations in which they are currently employed.

Competence compatibility encompasses how a venture project relies on specific resources and capabilities that reside in the ecosystem. This is manifested in the degree to which career and project goals fit with what local resources and capabilities can offer. A closer match creates opportunities for



Pathways leading to high/low alumni engagement

- 1a The need to orient oneself in the ecosystem activates a high proactive search effort, which triggers exploratory alumni engagement.
- 1b Increased experience of the ecosystem combined with continuation in focused competence areas reduces proactive search efforts, which reduces exploratory alumni engagement.
- 2a High compatibility between project and career goals and available competencies in the ecosystem's supporting infrastructure, which triggers instrumental alumni engagement.
- 2b Project and career goals diverting from the ecosystem's supporting infrastructure, which reduces instrumental alumni engagement.
- 3a Development of strong social identification coupled with reciprocal norms triggers emotional alumni engagement.
- 3b Weak social identification lessens willingness to exchange knowledge and information with others reduces emotional alumni engagement.

Figure 2. Drivers of alumni engagement.

increased instrumental alumni engagement, which fosters knowledge spillovers and the transmission of ideas (for example, Acs et al., 2013). On the other hand, lower competence compatibility reduces resource dependencies between the graduate and the ecosystem, thereby decreasing instrumental alumni engagement. Along this line, one informant described the experience of a poor match that reduced his instrumental alumni engagement as follows:

Our business idea was not particularly adapted [for the ecosystem] . . . maybe if it had been a tech company, it would have been much better . . . the kind of business you have will determine the type of support and resources you will get.

The other driver, locational advantages, encompasses the benefits of mutual interaction between actors who operate in the same ecosystem. Spatial proximity enables spontaneous meetings and interactions that support trust building, knowledge diffusion, and interactive learning (for example., Boschma, 2005; Feldman, 1994). It also opens for accessing ecosystem actors that control human, material, and financial resources, thus accelerating the instrumental engagement of graduates. While this general pattern could be observed for various entrepreneurial career goals, the critical role of location externalities was particularly evident for graduates undertaking focused efforts to develop and scale up innovative startups within the ecosystem. One of the informants expressed the importance of location advantages when attracting resources as follows:

We received money from investors, basically like business angels and other investors, and we are testing business ideas. [From this point] . . . it was essential to be located here in Lund, as we raised another round of funds to turn our ideas into real and functioning ventures.

Another informant engaged in starting up a venture stated the following:

If you talk to somebody who is an ultra-high net worth individual . . . who has been through the entire thing . . . and he or she is . . . betting on you, you need to be located [within the system] . . .

To conclude, the analysis suggests that the drivers of instrumental alumni engagement are embedded in competence compatibilities and locational advantages that influence the coordination and control of resources. When graduates' project and career goals match what can be potentially accessed via locally embedded networks and resources, they work cooperatively with other system actors to develop new products, satisfy customer needs, and incorporate innovations (see path 2a in Figure 2). On the other hand, when graduates engage in projects that are geographically distant from the ecosystem, they become less involved and thus remain at a moderate level of instrumental alumni engagement (see path 2b in Figure 2). Thus, our analysis pinpoints the role of technological trajectories and "smart specializations" (for example, Boschma, 2014) in driving instrumental alumni engagement, where strong

connections between venture project activities and the supporting infrastructure fuel the dynamics of university-based entrepreneurship ecosystems.

Drivers of emotional alumni engagement

The third set of key drivers comprises “reciprocity” and “social identification,” which make entrepreneurship graduates gravitate toward emotional alumni engagement. These drivers emanate from the dormant feelings of commitment and belongingness that they incubate when transitioning from students to graduates. Reciprocity encompasses exchanging things with others for mutual benefit; in this case, returning a “favor” to a system that has provided the graduate with benefits in the past. In this respect, the emotional engagement potentially increases over time as graduates develop their experience and reputation, which triggers requests to act as mentors or members of advisory boards based on their domain expertise. In this way, emotional alumni engagement is driven by social conventions that compel graduates to return favors to the ecosystem. One of the informants described this emotional commitment as follows:

Our program director approached me to become a mentor for the students because they could see that my expertise as a startup guy could benefit students in building their projects.

Another informant described the encouragement to commit time and effort to alumni engagement activities as follows:

Sometimes you are expected to give back . . . we get invited all the time to give a talk here and there.

In addition, the analysis suggests that social identification is a driver that fuels graduates to return favors to the ecosystem. Social identification encompasses the process where graduates ascribe to the qualities or characteristics of other system actors – particularly other recent graduates. Our analyses suggest that graduates’ sense of “who they are” and “how they relate to others” was implicated in how they view and connect with other individuals and groups in the entrepreneurship ecosystem. In this respect, emotional alumni engagement is not solely driven by social conventions that compel graduates to return favors to the ecosystem, but also by a strong sense of social identification (for example, Mael & Ashforth, 1992), which energizes the practice of exchanging things with others for mutual benefit. For example, when discussing the reason for connecting back after graduating from the program, one informant reported:

I wanted to be still part of something that feels connected to what I love – entrepreneurship, which is a really big motivation.

Another informant emphasized the need to stay emotionally connected after graduation:

I went to most of the events that were concerned with the program . . . and it feels great to show responsibility and attachment . . . even after graduating.

To conclude, the analysis suggests that the key drivers of emotional alumni engagement are embedded in feelings of reciprocity and social identification. Opportunities for making guest lectures and serving as mentors arise when graduates build up career experience and reputation in the ecosystem. These opportunities energize and increase emotional alumni engagement for graduates who incubate and develop a strong social identification in the period after graduation (see path 3a in [Figure 2](#)). However, graduates who incubate and develop a weaker social identification continue with a comparably low emotional alumni engagement (see path 3b in [Figure 2](#)). Reciprocal behaviors fuel and energize the functionality of the entrepreneurship ecosystem by creating and sustaining cooperative behaviors that support networking and the transmission of ideas (Spigel & Harrison, 2017). Strong social identification propels graduates to willingly exchange knowledge and information with peers for mutual benefit, which at the same time gives broader meaning to their careers and projects (Pocek et al., 2021).

In all, our process-focused lens provides an inductive, theoretically informed analysis of the beginning phases of alumni engagement among entrepreneurship graduates. From this point of departure and grounded in our inductive analysis, we developed a process model that identifies drivers of different forms of alumni engagement. As illustrated in [Figure 2](#), the model depicts how the three forms of alumni engagement vary in intensity in the early period after graduation.

Discussion

This study investigated the early phases of alumni engagement among entrepreneurship graduates. Our inductive, informant-centric research design allowed us to explore the microindividual actions that drive different forms of alumni engagement and the specificities and potential heterogeneity underlying the engagement process. Interviews with 18 informants, along with available secondary data, informed the process-focused analysis. Below, we discuss the implications of our findings for research and practice.

Theoretical implications

Our study adds to theory and research on the role and impact of entrepreneurship graduates as alumni in university-based entrepreneurship ecosystems. Our core theoretical contribution is a process-oriented framework depicting

Table 1. Three forms of alumni engagement.

	Explorative alumni engagement	Instrumental alumni engagement	Emotional alumni engagement
Component	Cognition	Conation	Affection
Characteristic feature	Sense-making processes	Strategic goal-oriented action	Feelings of commitment and belongingness
Giving and taking behaviors	<i>Giving</i> – sharing experiences and business insights <i>Taking</i> – gathering information about unknown ecosystem domains	<i>Giving</i> – focusing resources on new business opportunities <i>Taking</i> – accessing scarce resources associated with opportunity development	<i>Giving</i> – providing inspiration and encouragement <i>Taking</i> – building and affirming identity and self-efficacy
Key drivers	Proactive search	Competence compatibility Locational advantages	Reciprocity Social identification
Function in the ecosystem	Opening for entrepreneurial experimentation	Productive use of resources for entrepreneurial outcomes	Community building

the beginning phases of the alumni engagement process among entrepreneurship graduates. [Table 1](#) summarizes this framework.

We advance the alumni impact literature by identifying the microindividual enterprising actions of recent entrepreneurship graduates. Our study emphasizes the particularities and specificities of entrepreneurship graduates in becoming engaged as alumni within the university-based ecosystem and the multiple ways they engage as alumni in the beginning phases of the alumni engagement process. We found that the early process relies on components operating in three distinct domains: cognition (sensemaking processes), conation (strategic goal-oriented action), and affection (feelings of commitment and belongingness). Collectively, our findings explicate how graduates at the micro level experiment and interact with a constantly evolving system. Further, each component is connected with microindividual actions embedded in giving and taking behaviors. The cyclical process of giving and taking behaviors associated with the alumni engagement of entrepreneurship graduates can be related to what Stam (2015) referred to as the downward causation of entrepreneurship ecosystems, where system outcomes and outputs feed back into system conditions over time. In this respect, the alumni engagement can be understood as a part of ongoing feed-forward and feed-back mechanisms that develop and sustain value creation in the university-based entrepreneurship ecosystem (Meyer et al., 2020), which then circulates throughout the economy (Lindholm-Dahlstrand et al., 2018). Overall, these insights bring a fresh systemic perspective on the role and impact of entrepreneurship graduates as alumni in university-based entrepreneurship ecosystems.

Moreover, our process-focused lens delineates the alumni engagement of entrepreneurship graduates as a dynamic form of institutionally embedded behavior. Our analysis shows how the early alumni engagement process develops over time depending on the graduates' work situations and career

trajectories (Alsos et al., 2022). Specifically, the process model from our inductive analysis provides a nuanced understanding of how graduates' micro-level actions interact with macro-level institutional conditions when transitioning from students to graduates. Proactive search ignites the interest or excitement for investigating and making sense of the entrepreneurship ecosystem to develop the ability to work as a professional in this particular setting. Competence compatibility and locational advantages in the surrounding ecosystem energize local enterprising actions to achieve long-term project goals. Reciprocal norms coupled with strong social identification strengthen efforts to develop local networks embedded in feelings of commitment and belongingness to a community. Our contribution is thus to highlight how the state of the ecosystem influences and shapes the alumni engagement of entrepreneurship graduates. In this respect, the beginning phases of alumni engagement can be understood as a dynamic process where the entrepreneurship graduates contribute to the ecosystem as purposeful agents via interactions with other key actors in the university-based entrepreneurship ecosystem (Meyer et al., 2020).

Furthermore, our study contributes novel theoretical insights into how the microindividual enterprising actions of recent entrepreneurship graduates translate into alumni engagement behaviors that foster innovation and new economic activities in university-based entrepreneurial ecosystems. For example, explorative alumni engagement provides meaning to collective entrepreneurial experiences. On the system level, explorative engagement opens up for entrepreneurial experimentation via establishing symbiotic relationships, which introduce variation and feed the selection and upscaling of system activities (for example, Lindholm-Dahlstrand et al., 2018). Instrumental engagement embeds graduates in specific networks and contexts within the ecosystem, where they can develop cooperative agreements and strategic partnerships that support business development, market access, and technology transfer activities. On the system level, instrumental engagement supports the productive use of systemwide resources for entrepreneurial outcomes in a specific technical or business domain by economizing on the experientially acquired knowledge that graduates develop over time. Emotional alumni engagement provides graduates with emotional connections to other members of the entrepreneurship ecosystem via social systems of exchange. On the system level, emotional engagement creates and expands the social structure facilitating information sharing and entrepreneurial learning (Pocek et al., 2021), thus contributing to the "social fabric" that holds entrepreneurship ecosystems together (for example, Bichler et al., 2021). Jointly, these theoretical insights contribute to a reinvigorated view on the role and impact of entrepreneurship graduates as alumni by offering theory on how different forms of alumni engagement collectively contribute to the efficacy and viability of university-based entrepreneurship ecosystems.

Implications for practice

Our study offers implications for practice. First, we provide actionable knowledge that offers intermediaries, such as incubators and new venture support programs, a profound understanding of alumni's early-stage requirements, allowing them to plan and develop customized initiatives and strategies supporting their development and growth. Our study disentangles three forms of alumni engagement by which graduates navigate their ecosystem and the drivers underlying these engagements. For instance, our analysis shows that explorative, instrumental, and emotional alumni engagement collectively creates interdependencies and relational linkages that foster knowledge spillovers, creative combinations of resources, and the transmission of new ideas that fuel innovation and enterprising activities in university-based entrepreneurship ecosystems. Bringing these nuances to the fore contributes to a better understanding of how to develop strong student-institution relationships within university-based entrepreneurship ecosystems that flow across the student life cycle and continue beyond graduation.

Second, our study illuminates that the initial stages of the alumni engagement process of entrepreneurship graduates are embedded in giving and taking behaviors, where they not only explore and exploit resources in and around the university, but also contribute back to the local ecosystem. Given the benefit of reciprocal feed-forward and feedback mechanisms for the development and longevity of local ecosystem dynamics, university administrators and local policymakers can use these insights to cater for tailored events and activities aimed at supporting both giving and taking behaviors to meet the specific needs and interests of entrepreneurship graduates.

Third, our analysis and findings suggest that the alumni engagement of entrepreneurship graduates is subject to underlying macro-level institutional conditions that can facilitate or inhibit venture creation. For instance, our findings suggest that accessing resources necessary for venture development depends on local networks and domain-specific capabilities embedded in the ecosystem, where misinformation or misalignment can restrict graduates from actively engaging as entrepreneurs in the ecosystem. In this way, our study speaks in favor of informing about local ecosystem conditions, which may enable and motivate prospective entrepreneurship students to spot and seize business opportunities in domains compatible with competencies embedded in the university-based entrepreneurship ecosystem.

Limitations and future research

This study has several notable limitations. First, our study builds on the premise that a focus on temporality promises essential insights into the processual dynamics surrounding the alumni engagement of entrepreneurship

graduates. However, our study is limited to the first few years after graduation, thus neglecting the sustainability of the identified forms of alumni engagement over their entrepreneurial careers and their longer-lasting commitments and contributions. We encourage future research to undertake this endeavor.

We recognize that our analytical approach cannot fully identify and disentangle the relative effect of multiple alumni engagement efforts. For example, the process model that depicts the drivers of different forms of alumni engagement (see [Figure 2](#)) is embedded in individuals who may have many engagement dimensions simultaneously. Thus, we welcome studies that employ comparative research designs to complement and extend the analysis and findings of this study. In this respect, future studies can develop our analysis and conclusions by studying configurations or “profiles” of graduates within the ecosystem based on the dimensions’ overall engagement level and interaction. Such an approach would benefit from using fuzzy-set qualitative comparative analysis (for example, [Fiss, 2011](#)) to better understand different types of engaged alumni profiles.

Moreover, while our inductive, informant-centric research design has enabled us to develop an empirically grounded account of the beginning phases of alumni engagement among entrepreneurship graduates, we cannot provide answers to how unique these graduates are in their alumni engagement compared to former students with other educational backgrounds. For instance, while entrepreneurship programs contain special curricular features, we acknowledge that students in other programs may encounter in-curricular (for example, internships) or extracurricular (for example, job placements) activities that may drive them toward specific alumni engagement behaviors after graduation ([Meyer et al., 2020](#)). In this respect, future research is needed to demonstrate the nature, intensity, and impact of entrepreneurship graduates’ alumni engagement relative to other graduates.

Furthermore, our analysis and findings are embedded in the context of the Greater Copenhagen area, which is characterized by a high concentration of technology, communications, and life sciences. The domain-specific orientation of these industries may have reinforced the types of engagements and contingencies we observed, which could feature differently in other spaces or contexts ([Bergmann et al., 2016](#)). Furthermore, the Greater Copenhagen area is characterized by a regional culture that encourages, among others, cooperative and egalitarian behaviors. In this respect, the results from our study should be applied with caution when transferred to geographic settings and contexts with different spatial and institutional conditions. Future research could perform a cross-geographical examination where these forms of alumni engagement and contingencies are further explored and tested.

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Appendix A

Table A1. Description of informants.

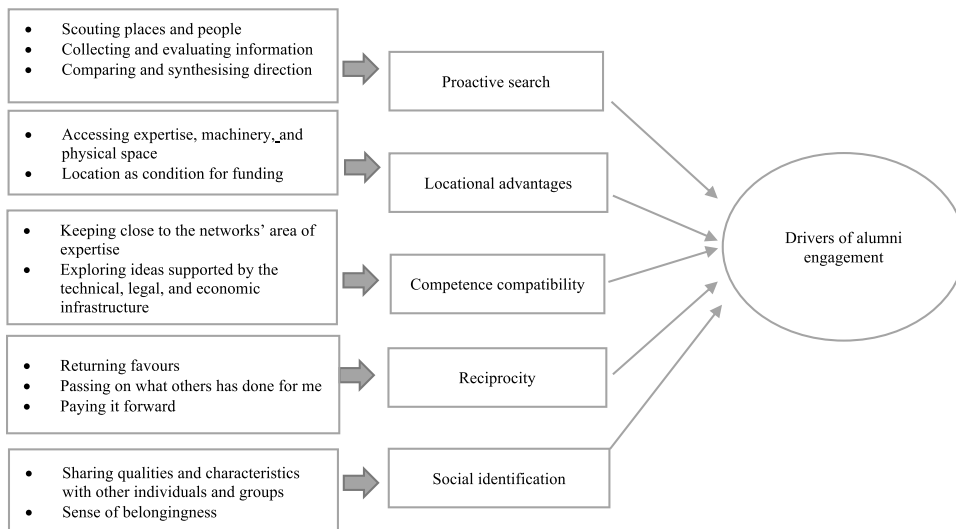
Informant*	Age	Years as a graduate	Main occupational role(s)	Industry	Alumni engagement
Adam	37	12	Founder of a coffee bar, a startup studio, and a co-working space.	Information technology and services	Networking events, mentor, finance provider to others.
Barbara	53	8	Founder of a research-based firm developing innovative and sustainable solutions to combating bed bugs.	Life sciences	Networking events, access to finance providers and the ecosystem support structure
Carl	28	4	Cofounder of a guest communication platform that helps build relationships between hostels, apartment and vacation rental, and their guests.	Information technology and services	Networking events, access to finance providers and the ecosystem support structure.
David	35	6	Cofounder of a company creating interior design products. The company was awarded and listed as one of the fastest growing companies in Sweden in 2019 and 2020.	Design	Networking events, access to finance providers and the ecosystem support structure.
Eric	32	6	Cofounder of a company creating interior design products. The company was awarded and listed as one of the fastest-growing companies in Sweden in 2019 and 2020.	Design	Networking events, access to finance providers and the ecosystem support structure.
Finn	40	2	Employed in an NGO providing resources such as skills, networks, and financial capital to entrepreneurs.	Nonprofit organization management	Access to the ecosystem support structure through incubators.
George	29	3	Cofounder of a company producing wild game snacks.	Food and beverages	Networking events, access to finance providers and the ecosystem support structure through TTOs.
Henry	28	3	Cofounder of a company producing wild game snacks.	Food and beverages	Networking events, access to finance providers and the ecosystem support structure through TTOs.
Isabelle	34	9	Employed in a public company offering business development services to high-growth potential business proposals.	Management consulting	Networking events, access to finance providers and the ecosystem support structure through incubators.
John	36	9	Founder of a company developing electric vehicles.	Automotive	Networking events, access to human/financial capital.
Kate	33	8	Employed in a support organization focusing on innovation and market support within public safety sector.	Security and investigations	Networking events, access to networks and market.
Luke	43	10	Founder of a production company specialized in animation, film production, and TV series.	Transmedia animation industry	Access to legal knowledge and domain-specific expertise.

(Continued)

Table A1. (Continued).

Informant*	Age	Years as a graduate	Main occupational role(s)	Industry	Alumni engagement
Michael	38	9	Employed in a platform helping companies to grow.	Information and technology services	Networking events, access to finance providers in the ecosystem.
Natalie	34	5	Employed in a travel agency with a meta search engine and platform facilitating travel decisionmaking.	Tourism	Networking events, access to networks, and feedback.
Oliver	37	2	Founder of two companies, including a music school and a platform that matches music students with music teachers.	Education	Networking events, access to resources and networks.
Paul	29	1	Employed in a large international company offering consumer goods.	Consumer goods	Access to finance providers and the ecosystem support structure through TTOs
Rachel	28	1	Employed in a regional innovation firm working on enhancing regional growth by supporting innovation.	Management consulting	Networking events, advisor to students.
Stephen	28	1	Founder of a music company focusing on choreography.	Music	Networking events, access to finance providers and networks.

* All names are pseudonyms.

**Figure A1.** Data structure for drivers of alumni engagement.