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How to locate resources in the personal networks along the entrepreneurial processes? Following-up of a nascent *digital nomad* entrepreneur.

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Introduction

The transition to entrepreneurship is a complex process, the study of which requires innovative adapted methods. The social sciences can help shed light on this process, taking into account in particular the social and technological contexts that are involved in these trajectories. To specifically address this objective, we propose to focus on the roles that personal networks of the entrepreneurs, combined with digital tools, play in accessing resources.. The digital transformation of communication media tends to shorten the paths of access to information and to opportunities, but the uses of these tools are often embedded in relational resources.. In this chapter, we propose a precise scientific method to better understand the emergence of resources from personal networks along the entrepreneurial processes. This method is particularly powerful for considering relationship-based strategies for finding resources and opportunities, including when relationships are distributed across multiple geographical locations or are digitally mediated. Indeed, we consider that rather than being an alternative, technological resources are articulated in continuity with relational resources (Bailliencourt & al., 2011). Thus, we intend to contribute to the body of work that focuses on the dynamics of entrepreneurial networks and on entrepreneurship as action and interaction (Shepherd, 2015; Elfring and Hulsink, 2019).

The social resources and opportunities associated to the personal network of entrepreneurs evolve along the process of development of their activity. Their localization requires to choose the relevant approach(es) of network analysis, the kinds of networks to consider, and to identify the precise features of the networks that need to be evaluated.

This proposal is based on a bi-disciplinary approach (sociology and management science) that contributes to fill the gap between social network analysis, processual analysis, and entrepreneurial studies. Its theoretical foundations lie upon some statements: 1) the entrepreneurial process unfolds along distinct sequences; 2) it mobilizes resources and opportunities through the people around who form the personal network; 3) the structure of this network is decisive, as well as the characteristics of the people and of the ties they maintain with the entrepreneur, but also the specific position they occupy in the structure; 4) The whole of this relational system evolves from one sequence to the next; 5) the relationship between the entrepreneurial process and the network is twofold: one influences the other and vice versa.

We consider entrepreneurship *“as a practice, a creative and social/collective organizing process that materializes a venture”* (Johannisson, 2011 p. 137). Sharing this view of

entrepreneurship calls to gather and generate actionable knowledge (Sarasvathy and Venkataraman, 2011), and thus, we attempt here to examine which academic knowledge stemming from the entrepreneurial networks research field can be considered as such.

We hence start by considering the network analysis dimensions that best fit our objective. To overcome some limits that are inherent to the historical development of this field (Hoang and Yi, 2015; Jack et al., 2008), we get “back to the origins” by mobilizing consistent knowledge, and specifically the contribution of sociology. We propose an analysis framework with four dimensions, and methodological recommendations on how to collect and analyze relevant data with the entrepreneurs. We then directly illustrate our propositions through the specific case study of a recruiter who started and managed to develop his activity on its own, as a *digital nomad*. In this case study, the network of the nascent entrepreneur is examined empirically and different relational ways through which he could get closer from his objectives are then identified.

Our approach demonstrates the value of knowledge transfer, supported here by interdisciplinarity. A very precise and longitudinal collection of personal network data allows to better shed light on the emergence of resources and opportunities during the entrepreneurial process, sometimes in unexpected pockets.

How to find resources in entrepreneurial networks?

... And how to help entrepreneurs analyze, use and develop their personal network along the stages of their business development? These questions are not trivial because 1) the representation of the personal network as a whole does not exist intuitively (no one has this image in mind); 2) the resources identified in the relationships are most often oriented directly to perceived usefulness, while they may reside in unexpected areas; 3) access to these resources depends on the position of the individuals in the network structure; and 4) it can only be constructed with methods appropriate to the specific objectives elucidated. Thus, the choice of approaches, scopes of analysis, constructs and variables matters.

Several wide literature reviews on the network approach of entrepreneurship have already been published over the two last decades (Hoang and Antoncic, 2003; Jack, 2010; Slotte-Kock and Coviello, 2010; Hoang and Yi, 2015) and reported a multiplicity of research approaches and nodal constructs, with sometimes, contradictory results. This can be explained by a marked tendency in entrepreneurial network research to focus on the effect of one or few network parameters (like the size, the ratio between strong and weak ties, the intrinsic “quality” of the

network). Concepts (like “tie strength”) and their definition can also be heterogeneous (Jack, 2010). It remains even true for the concept of “social network” in itself as it is very often confused with the big black-box concept of “social capital”. This makes it difficult in first instance to extract some generalities that could be taught and mobilized in an actionable way. In addition, the main approach adopted in the entrepreneurial networks research field often consists of identifying resources as associated to functional networks and functional ties, with little depth to their specific characteristics and contexts (Slotte-Kock and Coviello, 2010). This also implies that it may suffer from the lack of multilevel developmental analysis. By contrast, since its precursors (Moreno, 1953, Barnes, 1954), the Social Network Analysis field proceeds to a systematic collection of very precise data identifying nodes, edges and interconnections that allows to trace the structure of the network (e.g. White, 1961, Burt, 1982, Wasserman, Faust, 1994).

Here, the mobilization of two disciplinary traditions and interests, sociology (though Social Networks Analysis), and management sciences, makes it possible to combine the precise description and analysis of the dynamics of the personal networks of entrepreneurs, with the suggestion of convenient strategies for resource mobilization.

Which approach?

Entrepreneurial networks can be approached in different ways, as it can be seen from past contributions. For example, they can be approached through three distinct research lenses (Hoang and Antoncic, 2003): the network relationship, network governance and network structures (the latter representing the bulk of past contributions). Second, attention can be focused on different types of entrepreneurial actors: entrepreneurs, firms, and teams (Hoang and Yi, 2015). That being so.

Most strikingly, as Hoang and Yi (2015) note, depending on research trends, entrepreneurial networks are most often approached as "independent" or "dependent" variables. In our view, these last approaches are more problematic. As stressed by Slotte-Kock and Coviello (2010), this focalization on networks as “dependent” or “independent” variables comes from a positivistic view, widespread in the entrepreneurial networks field. Unfortunately, these one-sided approaches may have limitations when it comes to understanding networks as dynamic over time and subject to multiple contextual factors. For that matter, while falling themselves in this positivistic paradigm, Hoang and Yi (2015) for their part encouraged researchers “broadening the scope of future work to include multiple levels of analysis and to explicitly incorporate multiple empirical methods” (Hoang and Yi, 2015 p.42), and also called for “a

greater integration between (these) process and outcome-oriented research”. Slotte-Kock and Coviello went however further in their 2010’ review, by advocating the introduction of a more interpretive and contextualized view of dyadic relationship, in order to unveil the “motors”¹ of the network development process. More widely, as also pointed out by Jack et al. (2008), a general theory of networks development is still to be build and supported by empirical evidence. Actually, adopting a processual and even developmental approach to the network is undoubtedly necessary when one is called upon to advise an entrepreneur on networking “paths” that s/he may need to follow to access resources or create opportunities. Several preeminent studies showed that in the same way that the pool of necessary resources (and “relational mixes”) evolve along the progress and realization of the entrepreneurial project (Greve and Salaff, 2003; Lechner et al., 2006), entrepreneurial networks’ configurations evolve following different patterns, according to evolving needs (Elfring and Hulsink, 2007). Hence, it is important to adopt a double orientation: the first towards the resource entrepreneurs can access through their network according to the objectives they wish to achieve, the second towards the most relevant networks configurations depending on the phase of the entrepreneurial activity. This obviously implies adopting a double level of analysis, as proposed by Jack *et al* (2010): the network dyads (to provide relational context) and the general structure of the network (to provide structural context).

On its part, since the 1990s, Social networks analysis has focused on issues of network structure, providing a range of robust and relevant indicators with interdisciplinary validity. The most recent trend in this tradition is precisely to reintroduce the characteristics of individuals, relationships, and contexts into network analysis, and to consider their dynamics.

Several authors have noted the importance of considering contexts when studying networks (Feld, 1981; Mollenhorst and al. 2014) even entrepreneurial (Coviello, 2005). This contextual dimension is even more significant when one is placed in an advisory relationship with an entrepreneur – “flesh and bones”. Larson and Starr (1993) already claimed for viewing of the entrepreneur “as a whole person, a socioeconomic actor with a personal history and private concerns as well as economic interests” (p. 11). It calls for taking an interest in the relationships that s/he may had to develop over time, and therefore in the contexts in which these relationships have emerged. While research on entrepreneurial networks generally underestimates the dynamic dimension (Coviello, 2005; Kerr and Coviello, 2019), it becomes more common in

¹ As theorized by Van de Ven and Poole (1995) for processual analysis, these motors can be life-cycle, teleological, dialectical or evolutionary.

qualitative networks studies. The entrepreneur's current networks are captures of their past life stories, so it has a temporal depth. The relationships it depicts are anchored in the different strata of the entrepreneur's previous life (Bidart, 2013; Bidart et al., 2020a). "Networks aren't static; they evolve. Entrepreneurs may better manage this evolution if they are aware of the processes involved" (Hite, 2005, p. 115). This temporal depth can explain the state of the network at the initial entrepreneurial condition (Greve and Salaff, 2003; Hite, 2003; 2005), and it allows adapting advice accordingly. This especially implies grasping the notion of relational dynamics (Hite, 2005; Bidart et al., 2020b).

Considering both context and dynamics implies adopting a more comprehensive approach to the entrepreneur's networks. If we understand how ordinary relationships have been spontaneously constructed in the past, we can rely on these probable and routine dynamics to lead the entrepreneurs towards relevant suggestions, far from generalist advice that might turn out to be out of step with their own reality. Making these contexts and dynamics explicit can help entrepreneurs to "enact" resources or opportunities (Jack et al., 2008; Johansson, 2011), as they generally do not spontaneously succeed in identifying them within their networks, apart from those that might be obviously apparent.

Which network?

The question of which network to consider is far from being unproblematic (Jack et al., 2010; Bidart and Charbonneau, 2011). First, there is the question of the choice of the network nodal construct, when the aim is to give to the entrepreneurs some clues about the relationships they may purposely maintain, mobilize or structure following the current stage of their activity. Focusing on the entrepreneurs as individuals (instead of teams or firms) seems to be the most accurate and adaptable dimension according to our objective. Indeed, at the start of their activity, from the pre-entrepreneurial to the early stage of development of their business, entrepreneurs are embedded in their personal relationships (Hite, 2005) including their former jobs partners. The decoupling between personal network and organizational network is only gradual and sometimes partial (Larson and Starr, 1993; Lechner et al., 2006; Elfring and Hulsink, 2007). Moreover, the entrepreneurs still must rely on social, cultural or normative rules or mechanisms – better known by sociologists (Bidart, Degenne, Grossetti, 2020) – in order to form or maintain direct or indirect ties. Using an ego-centered network approach hence makes sense. It reflects the different temporal strata of personal history: childhood friends have other resources than recent encounters, the former giving more confidence, intimacy, and social

support while the latter are more contemporary with current needs and offer more relevant information (Granovetter, 1973).

Then comes the choice of the type of network to consider. For long time now, and for some methodological reasons, researchers from entrepreneurial networks or business networks have made clear distinctions between the different entrepreneur's networks (social, reputational, venture capitalist, informative, advisory, market-based, cooperative, cooperative ...). These distinctions are made on a utilitarian base – following the transactional contents of the network (Fombrun, 1982). But some researchers focused on other different kind of networks, like “discussion networks” (Wellman, 1979; Jack et al., 2008), “support networks” (Fischer, 1982) or “core networks” (Burt, 1984) introducing more personal dimensions. As noted by Burt (1997 p. 357) some structural features of the network – as important as structural holes for job-finding or for professional promotion, and even as a source of “competitive advantage” (Burt and Burzynska, 2017; Hindle and Klyver, 2011) – can only be spotted in personal networks, which are diversified in terms of kind of relations. Thus, business relevant resources and potentialities do not only reside in business networks, but more in the “relational mix” (Lechner et al., 2006) and its structural arrangement.

For our part, we see the “social” less as a network qualifier than as a mode of interaction. Moreover, in terms of network qualification, there is not a necessary ontological or practical disconnection between personal and business networks (as the former can include the last and reciprocally) (Davidsson and Honig, 2003). Indeed, and for instance, by definition, multiplex ties can be both socially embedded and business relevant (Anderson et al., 2005; Jack et al., 2010).

Which features?

The size, composition, connectivity, and structure of the personal network of entrepreneurs give indications of the resources it may provide, their circulation and their availability. These features can be very precisely described through indicators developed and tested in social networks analysis. For example, a dense network of strong ties promotes cohesion, but risks being redundant. Weak ties are more likely to provide new information. Structural holes reinforce the power of individuals who control them. The betweenness centrality of certain alters conceals an important potential for diffusion control. Isolated alters are interesting for innovation... These well-known results can thus be mobilized for measurements of these indicators, to compare different networks, or networks at different stages. Thus, considering simultaneously different characteristics of alters (meeting context, homophily, diversity...), of

ties (strength, focus, embeddedness, duration, multiplexity, emotional intensity...) and of structure (density, modularity, diameter, centralization...) can be indicative of reservoirs of opportunities, resources, and constraints (Granovetter, 1973; Burt, 1984; Coleman, 1990). Most studies focus on one or the other of these indicators, emphasizing its explanatory power. Other, more recent works seek to account for the overall structure of the network by selecting and ordering groups of factors and constructing network typologies (Bidart, Degenne, Grossetti, 2017; Vacca, 2020). It is also very important to go back and forth from the structure to the alters, because the positioning of alters in the structure gives them particularly interesting qualities: depending on whether they are central or peripheral, whether they are isolated or gather many connections, whether they form the only bridge between isolated components, they will play different roles in the network development and resource management.

A network graph visualization can also give a more integrated envision of the whole network and give a more meaningful overall vision of the person's relational universe; this also helps sharing the analysis process. Thus, the chosen representation algorithm can play a major role: for instance, those that arrange nodes according to their mutual interconnections give more visibility to the structure than standardized sociograms where nodes are a priori arranged according to social roles and tie intensity. A telling visualization can also be a matter of colors: coloring the nodes and their outlines helps to identify the ongoing contexts of the shared relationship with ego² (friend, colleague, associate, family member...), as well as multiplexity (i.e. whether a second context is shared).

Proposing a four dimensions analysis framework

Building on the previous discussion, we propose a four dimensions analysis framework of entrepreneurial networks (Table 1). This framework is based on one side on the qualitative analysis of the alters and the ties of the network (giving relational context), and on the other side on the overall structure of the network and alter's positions in this structure (giving structural context). As a complement, structural indicators such as the networks' density, modularity or diameter, and others that specify the way in which each alter fits into it (degree and betweenness centrality for example) can also allow very precise comparisons of these positions and their evolution.

² Ego is the main subject of a personal network (or Ego-centered network), i.e. the interviewee. In the present case, it is the entrepreneur.

Two uses can be made of it. The most classical one consists in studying, through a longitudinal survey, the evolution of the entrepreneurial networks. This needs a rich contextualization based on follow-up interviews. The second one consists in locating resources and opportunities within the entrepreneurial networks as they progress, and in orienting their development according to their needs at these precise moments. Both requires to co-analyze with the entrepreneurs their personal networks, in order to contextualize the analysis at each stage of the process.

<p>Qualities of the Alters</p>	<p>i.e.: position, skills, similarities/complementarities with Ego...</p> <p>Other qualities, that only the respondent knows, can emerge from the story by proving to be collaterally relevant (a sporting talent or a contact that can be mobilized ad hoc). Only the contextualization in the story can complete this list of qualities.</p>
<p>Qualities of the Ties</p>	<p>i.e.: family/friendship, strong/weak tie, specialized/polyvalent or multiplex, old/recent, accumulated shared experience (especially in terms of support), level of trust...</p> <p>Other qualities or flaws in the ties may emerge and alter the plausibility and desirability of the tie, as the story unfolds, and specific examples of past interactions are given.</p>
<p>Overall structure of the network</p>	<p>i.e.: density, profile of components, diameter, centralization...</p> <p>It is generally not conscious by the respondents, and a first learning of the reading of the graph is realized together. It gives information on Egos' position: they may suffer from the constraint induced by the high density of a cohesive group around them, or conversely, from an excessive dispersion of resources.</p>
<p>Alters' positions in the structure</p>	<p>i.e.: alters included in cliques, central, isolated, intermediaries between two components...</p> <p>Certain combinations may be examined following the entrepreneur's needs: central people with strong multi-purpose ties, people located on the periphery of the network...</p>

Table 1: Our four dimensions analysis framework

More contextual depth can be added again by following along time certain variables relating to their environment (labour markets, cities, business sectors, social groups), the development of their activity (current state of their activity on several dimensions, path undertaken and projections) or their emotional and volitional states. This allows to identify, from different sequences of combination of these ingredients, different evolutions of the driving forces animating the process and certain moments of bifurcation (Bidart, Longo, Mendez, 2013).

An illustrative case study

At the beginning of our study, Paul is a 34-year-old nascent entrepreneur (although he prefers to call himself a freelancer) who has just left his job in a large international recruitment firm. Disgusted by the company's managerial methods (that were based on quantitative approaches to candidate sourcing and pressure on performance indicators), Paul decided to tackle the business on his own. The post-pandemic period had first offered him the opportunity to escape from a difficult period in his emotional life by leaving to Malta. Fully fulfilled in this experience, he decided to develop his activity as a “digital nomad”, in order to continue to travel while working for his clients.

Research methodology

Our qualitative exploratory research takes part of a design science research (Dimov, 2016) that aims to develop a method to support entrepreneurs in reading, interpreting, and developing their network to find the necessary resources for the development of their activity. To this end, our interactive longitudinal data collection method consisted in following entrepreneurs throughout the development of their activity. Through regular interviews, we followed the evolution of their project, their activity, and their network, as well as the way in which they project themselves in the next steps of their activity development process. During these long interviews, we also taught them to read their own network graph with its specificities and their social significance, we asked them expose their thoughts and reasoning about their perception of their network features, we helped them locate the resources useful for the development of their activity and considered with them different subsequent network development strategies. The paths finally adopted among or outside the different strategies discussed were then questioned in the following interviews... and so on.

Data collection and analysis

Paul was included in the study (that is still ongoing) on april 2021 and was followed over 9 months to date, during 4 interviews, for a total of 12 hours (approximately 3 hours each). Each interview was audio recorded and note taken. The very first interview was dedicated to network data collection. We collected Paul's personal network data through a set of name generators whose purpose was to produce an overview of his relationships in a variety of personal and professional contexts and kinds of ties. We avoided limiting this network to ties considered useful for the moment, knowing that resources can be found by surprise and in unpredictable niches. Name interpreters were jointly used to gather information about the alters whose names were cited. We took care not to question Paul about his project before this first stage of data collection. Thus, we also took care to conduce the first interview about the entrepreneurial process before revealing to the entrepreneurs their network representation, because we know that the process of inquiry in general, and the visualization of the network, has effects on respondents' attitudes and narratives (Ryan, Mulholland, Agoston, 2014; Tubaro, 2019). The network structure was then manually collected through a matrix of interconnections between the alters cited.

The interviews dedicated to project clarification and follow-up (from step 2 onwards), are all structured in the same way: a first interview phase consisted of gathering information about the entrepreneurial project, the activity development process and the personal context of Paul, as well as the names of the people involved in the story; a second interview phase consisted of comparing the mentioned names with those cited in the previous interview, especially those Paul had planned to contact or solicit. We updated his network graphs by removing alters or ties and adding others. During the very last part of the interview, we taught him to read his network graph according to the 3 dimensions of structure, alters and ties, and to identify reservoirs of resources or opportunities that could serve his entrepreneurial goals as previously expressed. It was therefore equally important in this joint analysis to be precise about both the structural positions of the alters and their nominal and contextualized information.

Qualitative data were coded from the interview transcripts with the NVivo 12 software. The entrepreneurial networks graphs and their updates were drawn using the "VisNetwork" R package.

As this moment, Paul had many ideas. In particular, he would like to develop a mutual aid network of digital-nomadic recruiters and maybe coworking spaces abroad.

At this time of our first interview, Paul knows that he doesn't want to work anymore as a company employee and doesn't want to be forced into it by necessity. Although some of his former clients remained loyal by calling him back to entrust him with missions, he doesn't feel very confident in terms of economic viability and wishes to develop a strong customer base anchored in his region of origin. At that time, he doesn't consider relying solely on his personal network to find clients and candidates, as he felt that his relationships were "powerless". He feels also concerned by need to access to specific work tools, in order to ensure his work efficacy. However, the cost of these tools represents a heavy investment for a nascent independent. Yet, Paul already collaborates with Sarah, a former employee colleague who also left their former company and started freelancing, and has given him the benefit of her experience. She introduced him in the co-working space she manages and gave him access to a CV library to help him get started and find potential candidates. But actually, Paul doesn't feel very legitimate as an entrepreneur either: he is seriously thinking about the opportunity to franchise with Yann. The latter, owner of a quite large company, would provide him with expensive work tools, and reciprocally, Paul would help him cover the construction sector in which he is a specialist. Paul talks about it with one of his best friends, Maxime. In parallel, Dennis, a German friend he met in Malta, proposes to become a partner and to help him to develop his corporate identity and to initiate to inbound marketing.

Paul mentions as possible resources providers people who already helped him or share his new experience: Maxime, Marc-Antoine, Xavier, and the father of his ex-partner Elodie. These alters are very different: Maxime is a former friend of studies with whom he also plays sports; Marc-Antoine is a friend who works in a consulting firm; Xavier is a friend who works in real estate and whom he met in Australia; Elodie's father is president of a medical association and has introduced him to important people. The relationships with these people, whether recent or old, professional or friendly, are all strong ties and Paul has experienced the trust he can give them.

At this time, Paul's network structure is quite dense (see fig. 1), its core being centralized on his parents, a former colleague Maxime and his ex-partner Elodie. To consolidate his value proposition and test it without risking ruining his reputation, Paul can rely on this core of security made up of strong ties with benevolent people who are connected to each other (like Maxime, with a multiplex tie and connections to people in diverse contexts). But such a density

risks to become redundant and to prevent him from extracting himself from his professional routines. Besides, we can note that Sarah, Yann and Denis, who give relational access to actual resources or opportunities, are all peripheral or isolated alters.

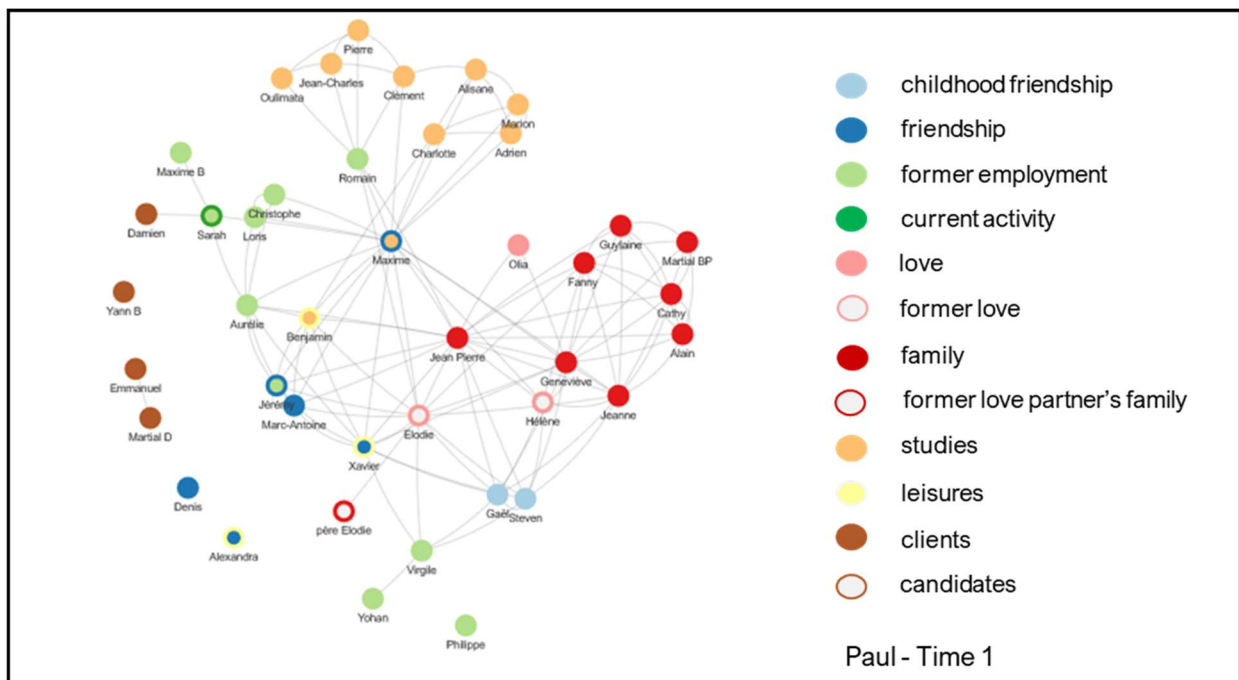


Figure 1: Paul’s network at the starting of his activity

Six weeks later, Paul has clearly broken away from his doubts. He has already achieved the half of his starting annual revenue target. He also feels positively surprised by the trust that his candidates and clients placed in him. One of his biggest clients even spontaneously recommended him to contacts and partners, who called him in turn. Finally, a major part of his new work opportunities came from a snowball effect within his personal network. A telling anecdote is that his friend Maxime called to give him the contact of one of his clients he didn’t want to work for himself. It was just exactly the contact that Pascal was trying to find for days. This client was hiring and seeking for candidates. The same day, Loïc, a neighbor of him called to take some news. He was seeking for a new job and had just the right profile. Paul matched them.

The partnership plan with Yann did not work out, because the contract was unfavorable to him, and Paul removed him from his network graph: he has decided to break this tie since he feels he has been cheated. Yet, his close friends, especially Maxime, had warned him that he didn't need to work with Yann and that it was only a mean to reassure himself. He also managed to tell Dennis that he didn't really believe in their collaboration: he has a hard time getting hooked on inbound marketing, it's not what he needs. This experience with Dennis taught him to not

mix his familial or amical spheres in professional contexts to avoid emotional strains. He now wants to apply what he calls “the snail strategy”, which means starting from his trustworthy network, gaining self-confidence, clarifying his ideas and enlarge his network with new people.

Paul remains very attached to his new freedom: he isn’t interested to find associates anymore, and doesn’t want to grow and hire employee either. This is in how he distinguishes his project from Sarah’s one (who wants to grow up her own cabinet). However, they still collaborate by bringing business opportunities to each other, under a compensation agreement. That’s the model he wants to be part off: being a freelance surrounded by freelance collaborators to create synergies. In that respect, as a *digital nomad*, Paul already worked from four different places and two different countries at that date (and he was in the Emirates). He comes back in France periodically to meet his clients. Although at the outset he was sometimes reluctant to tell them that he was calling them from another country in fear of losing credibility, he now completely endorses it as a part of its professional identity.

In this way, Paul really focuses on developing his professional skills. Giving himself a routine helps him to counteract the sometimes-destabilizing effects of digital nomadism. As part of his daily routine, Paul does a morning workout listening to professional practice-oriented podcasts. While he is always willing to gain efficacy with new work tools, finding a professional software is anymore an issue: he found a convenient one while assisting to a webinar and exchanging afterwards with one of the speakers, Pierre-André, who trained him to its use. He also subscribed to slack channels in order to learn good practices and exchange advices with other freelances in his domain. Surrounding himself by experts is now his next objective.

At this time, although his network kept its big dense component (see fig. 2), it lost a little density by the addition of isolated alters on the periphery, and has been diversified with new ties. As seen previously, a snowball effect plays within his client part of network, while interestingly, some great work opportunities keep coming from two reliable relations – Sarah and Maxime – with whom he has multiplex ties. Also, at the present, one part of his professional relations transits through digital medias but is circumscribed to learning activities.

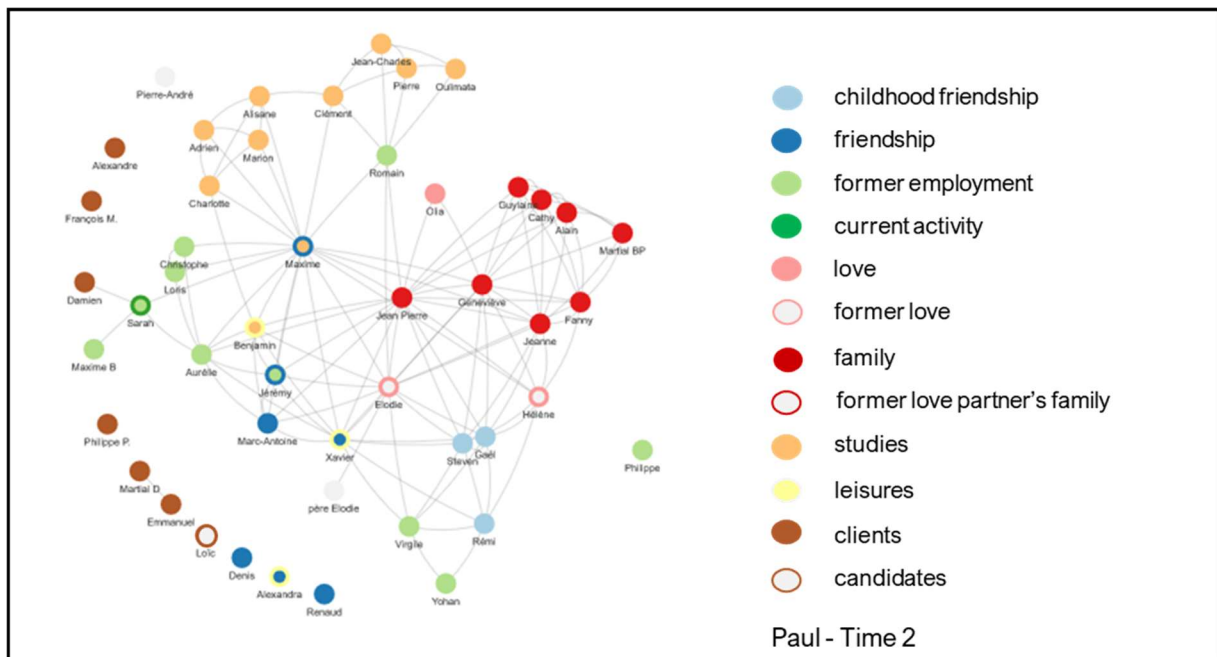


Figure 2: Paul's network, six weeks later

Six months later, Paul seems to have really fulfilled himself in his activity and has gained confidence in his abilities. Now, he has already managed to double the (comfortable) annual revenue target he had set himself. This allows him not only to choose his clients, but also to take a break and focus on his personal development. Because he doesn't want to change his living standards, but rather to become free from work, he even thinks to invest one part of his income in order to make it fructify, to be able to support Olia's (his new partner) professional freedom, and to diminish again the work part of his time. Eventually, he would like to develop his own digital platform (allowing clients and candidates to match more easily), to increase his work efficacy.

However, with the difficulties he now faces in travelling, due to the pandemic context, Paul keeps the soul of a digital nomad. He is about to leave to the Canary Islands to develop his Spanish-speaking. He plans to stay in a co-living space first, to meet people with whom he shares the condition of digital nomad. However, he is no longer interested in this type of space as such because he appreciates its autonomy. He knows now that dense cores of friendly or professional ties burden him. Later, Olia will join him for 3 months in a rented house.

He is determined for the moment to develop the image of his brand, thus he called on a former football companion, Rémi, now a freelancer, for a website development and web design service. Paul meanwhile continues to collaborate with Sarah, and now also her sister Manel, with whom they exchange services between peers, and jointly invest in shared databases. He has also

chosen a range of digital platforms and services that facilitate the management of his business: online banking, remote accounting, customer call back from abroad, etc.

But Paul would still like to improve professionally, in communication and even in personal organization. It was through listening podcasts that he identified speakers (Bérangère, Claire, Tanguy, and Thibault-Louis) who could help him evolve in his professional practices, whom he contacted via LinkedIn to get their advice on training, or even to train directly with them. This is how one of them, Thibault-Louis, came to accompany him in copywriting, and how he is in discussion with Tanguy about a hiring software.

Paul thus sorted out most of his friendships, leaving some of them who brought him additional difficulties when criticizing his plans, or when being too far from his new self, like his childhood friends. Indeed, he would like to build a network of ties that are dissociated from each other, to be enriched by new professional discussions and debates, by inspiring experiences (such as those of Tate, Marra and Cheikhra met through Olia) and to learn even more.

At this time (see fig. 3), Paul’s network lost density again by the adding of isolated ties, like Rémi (whom Paul didn’t consider before as a resource, and is met only online). It also extended at its periphery, through Olia’s relations on the personal side, and through Sarah’s relations on the professional side (both are two reliable people).

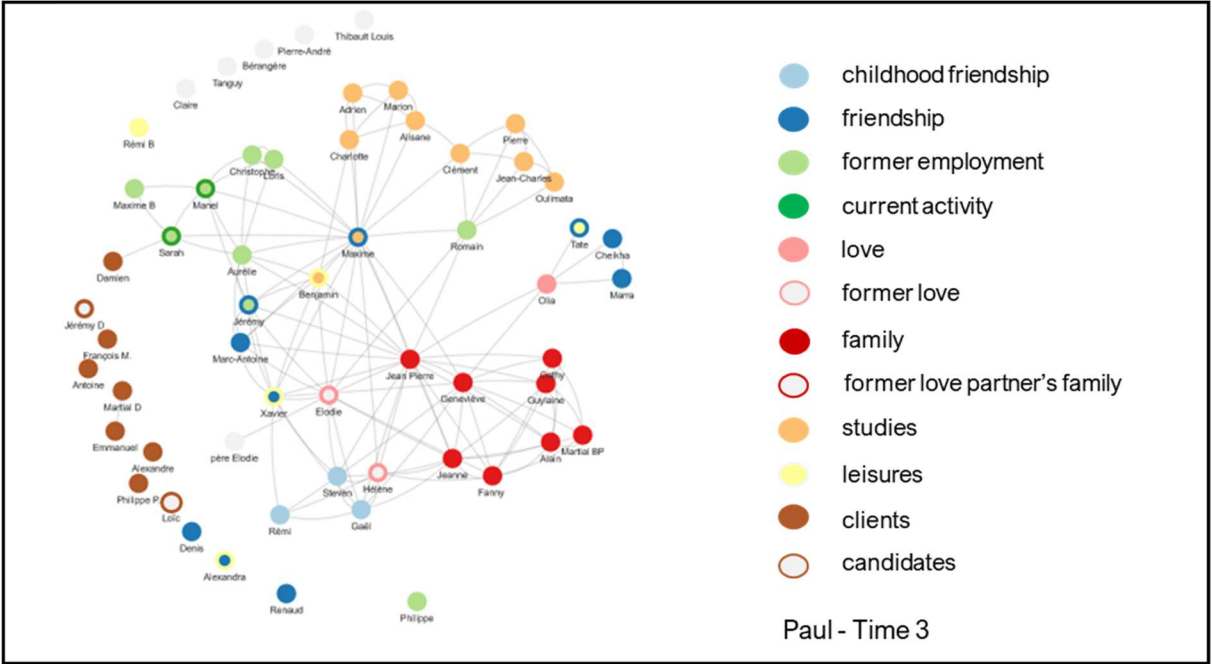


Figure 3: Paul’s network, after 6 months

In sum, Paul has now entered the next sequence and strategy and has accumulated clients. He found lots of new ties through travels and digital networks, and became a typical mobile, cosmopolitan entrepreneur, used to working with people at a distance, and few "anchored" in space. He is more comfortable mobilizing people he does not know, whose posts he has just appreciated or whom he has met on a forum. Fluidity is characteristic of his sociability practices: he rejects any enrolment in a stabilized group and he comes closer to his self-definition of "digital nomad".

Discussion

These entrepreneurial stages and the elicitation of relational resources, some predictable and others not, could not have been so clearly illuminated without the articulation and precision of our methods. Without the visualization of his network, the observations and interpretations of its density, of the presence of important components of ex-colleagues, of the very strong centrality of certain alters, and the acknowledgement of the necessity to develop the periphery in order to diversify and become autonomous, Paul would perhaps have engaged less relational strategies in adequacy with the stages of his entrepreneurial process.

Meeting with Slotte-Kock and Coviello's (2010) call for multilevel and contextualized analysis, our contributions thus bonds the strong findings of sociology concerning the dynamics of relationships and networks in social life in general, the very precise indicators proposed and widely shared by the network analysts, with the knowledge from management sciences concerning firm development perspectives and effective relationships for entrepreneurs.

Our real-time entrepreneurial network analysis in the processual mode, which articulates the ties, the resources, the structure, with the precise sequences of the entrepreneurial process, proves to be innovative and promising. However, it does have some limitations. First, it is time-consuming, it requires a minimum level of skills to discuss these relational qualities at length on several levels and dimensions; it implies not limiting data to ties that are useful in the professional sector and in the present time: it is complex to design, realize and analyze. The data are extensive, thick, and there is a risk of "drowning" (Poole et al., 2000; Van de Ven and Poole, 2005) if we do not sequence them at each stage. Second, the longitudinal dimension does not resolve all the questions opened by the temporal nature of the process. For example, the entrepreneurial project is generally viewed as a teleological driving force, whereas the evolution of the network is more difficult to perceive and assess. It rather works as an evolutionary driving force, which proceeds by variation, selection, retention, or rejection of ties without the person

really noticing it (Van de Ven and Poole, 1995). These are two different levels of reality and agency that we are bringing into play here.

Also, using a digital tool for data collection and visualization (like a prototype we have currently under test) could support this data collection and could allow us to follow groups with a slightly different design (for instance including a sort of “control group” that will not benefit from the learnings related to the visualization of the network graph). The identification of typical entrepreneurial and relational sequences will hopefully lead to further generalizations.

Conclusion

The case study we presented to illustrate our methodology showed the interest of a multidimensional approach that combines overall structure shape and positioning of the Alters in this structure. Combining these structural features with qualities of alters and those of the ties contributes to a better interpretation of their position in the structure, but also to a better choice of some alters as valuable targets for developing, reinforcing, or mobilizing ties. It also provides an opportunity to see how relationships provide access to digital tools, and in turn how these tools allow, especially for highly mobile people, to create new relationships at a distance and maintain lasting ties. This emergence of a resource is often unpredictable: indeed, it is sometimes a secondary quality or shared activity of alters, or a personal tie that first appears far from entrepreneur’s needs, that only becomes relevant in a particular context and circumstance. The account of the concrete help provided, placed in parallel with the potential resources identified, shows its heuristic force (in comparison with works that are based only on finite lists of standardized resources).

Thus, an extremely precise analysis of the structure and composition of a network combining strong and weak ties with people in various roles (family, alumni, colleagues, hobbies, etc.) can therefore help to enlighten entrepreneurs about their relational resources and guide them towards favorable strategies for the current phase of their project. This opening up to the non-business network enables them to learn to detect less obvious and predictable resources.

The longitudinal dimension also proves to be necessary for the study of processes. For each of the cases examined, the questioning aims at articulating the stages of the process (with its contexts and contingencies) and the multiple forms of recourse to alters (whose characteristics evolve according to these contexts) and to digital tools. Along the interviews we added and

removed alters according to what was told and we modified the interconnections if necessary. In this way, we obtained combined biographical and relational evolutions.

Compared to works that often infer resources directly from networks by arguing for the numerical increase of ties or for that of a single indicator, we insist on this multi-dimensionality of factors in the search of a most favorable configuration... for each sequence of the entrepreneurial process. There is no “best network” in general. Not all resources are predictable. But going back-and-forth between respondents’ stories and experiences on the one hand, and a reading of their network profile (and changes) accompanied by scientists who do not know his alters but know how to read the particularities of their position in the network, brings a completely innovative and reproducible approach.

In so doing, we seek to contribute to the formation of a body of practical knowledge that can be used to inform and accompany entrepreneurs along their process, and that can be taught in entrepreneurship programs. Indeed, the core of fundamental knowledge on entrepreneurial networks in its current form does not constitute in itself a stock of “ready-to-apply” knowledge, even if it were widely made available or vulgarized to entrepreneurs (Dimov, 2016). The challenge is to relate this knowledge to the different contexts in which entrepreneur find themselves, and to the complexity and evolving nature of the situations they face (Engel et al., 2017). This implies adopting a specific epistemological posture, i.e., rooting ourselves in the action sciences (Argyris et al., 1985).

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