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Effectuation and the dialectic of control

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ABSTRACT

Proposed as inverse of causation, effectuation logic holds that expert entrepreneurial action begins not with a predetermined exogenous opportunity of a predicted future goal but with a given set of means and fluid future ends. Control, not prediction, is the central theme of the effectuation logic Sarasvathy (2001; 2005; 2008) proposes explaining opportunity creation under uncertainty as an endogenous process". How does a resource-poor start-up entrepreneur exercise effectual control? Exploring this apparent contradiction through in-depth qualitative data, the paper suggests effectual control to be a relational construct and theoretically better understood as a 'dialectic of control' described in Giddens' (1979; 1982; 1984) social theory of structuration. The paper conceptualises effectual control as a dialectic that explicitly recognises the autonomy of other stakeholders in entrepreneurial opportunity formation advancing the theoretical understanding of effectuation, and suggests the clarification that an effectuating entrepreneur attempts to control not the future but the enhancing means in the present.

Keywords: Effectuation, control, dialectic

INTRODUCTION

Sarasvathy (2001; 2005; 2008) shows that most entrepreneurs successful in shaping entrepreneurial opportunity recognise that the future is unpredictable and hence do not put too much store by causally based prediction of the future. Instead, more often than not, their actions follow the logic of effectuation that does not need predicting an unknowable future. Through the concept of entrepreneurial effectuation she describes the way in which entrepreneurs shape opportunities under Knightian uncertainty with the now famous pithy tag 'To the extent that we can control the future, we do not need to predict it' (S.D. Sarasvathy, 2001, p. 252).

This paper explores an apparent contradiction that follows from the above: How does a start-up entrepreneur, with resource poverty, have the power to exercise control in effectuation. It reports start-up actions of three entrepreneurs, and analyses their decisions and actions to help understand the nature of effectual control at play. The paper inductively develops explanations of how entrepreneurs, given resource constraints, could exercise control in effectual action in the different start-up situations. Through examining in-depth qualitative data, the paper proposes that the entrepreneur's effectual control in start-up opportunity formation is relational in nature and can be explained at the level of theory as a dialectical process that recognises the agency of others alongside the agency of the entrepreneur, much like the 'dialectic of control' concept in the social theory of structuration (Giddens, 1979; 1982; 1984). It advances the understanding of effectuation and concludes that a structuration perspective might provide a theoretical basis for the dialectic of effectual control in entrepreneurial opportunity formation, explicating the apparent contradiction of control by a resource-poor entrepreneur. It also clarifies the setting of the dialectic as entrepreneurial attempt to control the enhancing means in the present rather than the unpredictable market possibilities in the future.

It may be mentioned that some previous entrepreneurship literature has linked structuration theory and entrepreneurial processes. Sarason et al. (2006) has attempted to characterise the opportunity process per se as structuration, but has not explored the control aspect of entrepreneurial effectuation. Also, this paper differs from some other work applying structuration theory to entrepreneurship as an embedded socio-economic process in rural settings (Jack & Andersen, 2002), or reconciling the entrepreneurial opportunity recognition (discovery) and formation (creation) approaches to entrepreneurship research (Chiasson & Saunders, 2005), or how inter-organisational collaboration between partners highly embedded in their institutional fields may develop new proto-institutions as explained by Lawrence et al. (2002) adopting DiMaggio & Powell's (1983) description of structuration. Rather than institutional and inter-organisational processes in institutional settings or the opportunity process debate in entrepreneurship research, this paper examines the micro-processes of how effectual control in entrepreneurial opportunity formation action plays out using the lens of Giddensian concept of a dialectic of control in structuration.

Control: The central theme in effectuation

The 'logic' of effectuation that Sarasvathy (2001; 2005; 2008) proposes is the latest comprehensive effort in understanding entrepreneurial opportunity formation under uncertainty. She posits that entrepreneurial opportunity under uncertainty is an endogenous creation process that is explained better by an effectuation logic rather than by a prediction based causation logic because of the unpredictability of the future. She shows that, in start-up situations, expert entrepreneurs use effectuation more often than novice entrepreneurs that allows them to get around this unpredictability. The difference between effectuation and causation is brought sharply into focus with Sarasvathy positing that effectuation of entrepreneurial opportunity involves:

- affordable loss, rather than expected returns (estimated through prediction)
- strategic alliance, rather than competitive analysis
- exploitation of contingencies, rather than pre-existing knowledge leading to: 'control of an unpredictable future, rather than prediction of an uncertain one' (Sarasvathy, 2001, p. 259, reworded).

Sarasvathy elaborates the processual logic of effectuation as an inversion of the logic of causation, explaining that the entrepreneurial opportunity process builds on control rather than on prediction. The entrepreneur starts with a set of means at hand, searches the environment for what effects she can create from those means, enhances those means with the means of others that are willing to join her search thus often changing the effects that can be created. This process continues iteratively, converging to a real opportunity in successful cases, with the entrepreneur *doing everything possible to control* the process. The crux of the effectuation principle is the acknowledgement of the impossibility of prediction under uncertainty, and the position that entrepreneurial action under uncertainty is based on control that removes the need for prediction. Control is the central theme in entrepreneurial effectuation that, in contrast with causation, is non-predictive in nature.

Sarasvathy (2008) elaborates on the centrality of non-predictive control in effectuation through the 'affordable loss principle' and insightful analogies like the 'crazy-quilt principle', the 'lemonade principle' and the 'pilot-in-the-plane principle'. Effectuation logic is explicated through these principles that encompass the non-causal actions of the entrepreneur mentioned earlier, i.e., of setting affordable loss limits, of attempting strategic alliance and exploiting contingencies. Rather than working on an analysis of competition based on exogenously predicted knowledge of an opportunity target, the entrepreneur precommits what s/he can afford to lose, stitches together a crazy quilt pattern as s/he goes (makes lemonade if lemons come at her/him), like the human pilot in the plane for mid-course corrections. The entrepreneur expects to face lemons and mid-course corrections, knowing s/he is navigating through the uncertainty that is neither a predicted 'green' nor 'blue' world but a 'grue world' of information isotropy. Sarasvathy's (2008) entrepreneur effectuates on an affordable loss principle, through a 'grue world' controlling the 'bird in hand', i.e., the means of enhancing but necessarily tentative precommitment (against a 'green/blue' world with attempts at a predicted fixed teleological end). The effectuator's actions are directed towards increasing means at hand with an often changing end goal (product) rather than aiming to reach a causally predicted goal or product. In this sense whatever the effectuator does is to enhance her control over the set of means in the start-up situation precommited by herself and other stakeholders. These tentative precommitments of the entrepreneur, and of other emerging stakeholders motivated by the entrepreneur, are actively nurtured by the entrepreneur on a relational basis. The precommitments develop around the entrepreneur's efforts where the entrepreneur's thesis about the possibilities from the resources at hand modifies as it synthesises with the other stakeholders' precommitments at different stages in a back-and-forth dialectic.

Dialectic of control: Effectuation and structuration theory

The nature of control in effectuation as a relational dialectic proposed above resonates with the concept of dialectic of control posited by Giddens in the social theory of structuration (Giddens, 1979, 1982, 1984). While Giddens' 'vast output is not easily summarised' (Whittington, 1992, p. 694) a very – almost unduly – brief reminder of the structuration theory follows.

In proposing the duality of structure as both enabling and constraining to the agent in structuration theory, Giddens posits that social interaction produces and reproduces social structure by the very action of social agents. Giddens (1979, 1982, 1984) explains the flow of social patterns and movements through aggregated concepts of agent–structure interaction with agentic action occurring within social structures of signification, legitimation and domination reproducing those social structures in the *longue durée* of institutional time (thus shaping institutions). On the other hand, he also conceives of individual agentic action changing structure through agentic power in the temporality of human life span[1]. This is the aspect of structuration theory that deals with control and will be pertinent to our discussions here. In this context Giddens considers 'power' as the third element of structuration ('an elemental part of the logic of social science ... So it is agency, structure and power' (Giddens & Pierson, 1998: 84)). It is this concept of power that accompanies action and 'interpreted ... as the capability of achieving outcomes' (Giddens, 1982, pp. 38-39) that Giddens calls 'power as transformative capacity' in the context of the (weaker) agent. This concept is highly relevant to a start-up entrepreneur who usually faces larger potential market clients. It is pertinent that Giddens posits the interplay of 'domination' as a structure and 'transformative capacity' as agency implies that power is understood as 'interaction where transformative capacity *is harnessed to actors' attempts to get others to comply with their wants.* Power, in this relational

1 Giddens conceptualises time (with respect to agent–structure interaction) as existing on three levels: the reversible durée of day-to-day experiences, the reversible longue durée of institutional time, and the irreversible duree of the individual life span. It is on the temporality of individual life span that social structures can change with agency in structuration, which is relevant in entrepreneurial opportunity action.

sense, concerns the capability of actors to secure outcomes where the realisation of these outcomes depends on the agency of others.' (Giddens, 1979, p. 93; italics in original). Power relations, according to Giddens, are always two-way, as '*involving reproduced relations of autonomy and of dependence*' (Giddens, 1979, p. 93). This simultaneous autonomy and dependence enables an ostensibly weaker agent to negotiate with often stronger parties and transform the situation to comply with his/her wants, since the more powerful has some degree of dependence along with their apparent autonomy. Giddens calls this relational concept of autonomy and dependence the 'dialectic of control' in structuration. 'By the dialectic of control I mean the capability of the weak, in the regularised relations of autonomy and dependence that constitute social systems, to turn their weakness back against the powerful.' (Giddens, 1982, p. 39). In the context of opportunity action, it is the interaction / structuration between the usually weaker entrepreneur agent and the usually larger potential clients' rules-resource structure that the entrepreneur seeks to extend control over in order to get the potential client to do what the entrepreneur wants (Bhowmick, 2007). It is therefore suggested here that the entrepreneur is engaged in a structurational dialectic of control in attempting to effectuate an opportunity, and proposed as follows:

> *Proposition 1*: Non-predictive control in entrepreneurial effectuation is a relational and structurational dialectic the entrepreneur initiates with the immediate market environment.

The interaction of the entrepreneur's initiating agency and precommitted response of other potential stakeholders including potential customer form the structurational dialectic that the entrepreneur attempts to gain control over. The crux of the control the entrepreneur nurtures and develops, hoping it would give shape to a concrete opportunity, is control of the dialectical process rather than of a future product idea or plan that is pre-set by prediction. The effectuation process is dependent upon the agency of the entrepreneur, i.e., on the entrepreneur's transformative capacity to guide the process and enlist external stakeholder support even at the cost of altering the product/opportunity possibility. It therefore must also rely upon the other stakeholders' responses/actions. Thus while this dialectic of control is driven by the entrepreneur, it is also dependent upon other stakeholders. A major stakeholder for the effectuating entrepreneur is a potential customer whose feedback or precommitment strengthens the entrepreneur's set of means by contributing crucial market acceptance possibility (or even funding) to the opportunity formation process, which also carries the possibility of non-contribution from the stakeholder. In that sense there is a level of control that the stakeholder/strategic alliance partner, often the potential user/client, will possess that may contribute to shaping the entrepreneurial opportunity or hampering it. The following proposition is framed to bring out this line of reasoning that an effectuating entrepreneur faces stakeholder decisions in a dialectical process that affect the shaping of an opportunity positively or negatively, as proposed below.

> *Proposition 2*: The dialectic of non-predictive control in effectuation is largely driven by the effectuating entrepreneur; it is also affected by other potential stakeholders in the environment who impact the means and influence the shaping or dissipation of opportunity.

In the face of unpredictability of the future, a start-up entrepreneur, coming from a relatively weak position with liability of newness and of resource poverty that characterise start-up situations, exercises a relational control over the start-up situation, i.e., extends a relational interdependency with other agents or stakeholders that are important to the starting up process. Whether the dialectic will yield an opportunity depends upon how the means reinforce each other and evolve. It is dependent upon both the transformative capacity of the entrepreneur to influence important stakeholders to precommit, and also the entrepreneur's capacity and readiness to encourage the changing shape of the emerging opportunity, to strengthen the dialectic rather than inflexibly pursue a predicted opportunity goal. Effectual control therefore is the control of the relational process getting stakeholder buy-in, giving away stake in various forms including ownership stake, and it is actively driven by the entrepreneur without whom the commitments would not have happened. Effectual action fails to form an opportunity when the effectuating entrepreneur loses this relational control of the process to foster the interdependencies with others enlisting them as stakeholders. This relational effect of when the dialectic of control is likely to positively affect the opportunity formation process is set out in the following proposition.

> *Proposition 3*: The possibility of an opportunity forming depends on the strength of the dialectic that the entrepreneur shapes by keeping control over the means and resources, and simultaneously enhancing them through potential stakeholder precommitments.

It is informative to look at the central theme of control in effectuation with the dialectic of control concept in structuration theory. While effectuation explains entrepreneurial opportunity creation as a process of non-predictive control actions, structuration theory can be seen as the theoretical basis to understand the dialectic nature of the effectual control that the entrepreneur exercises. The effectuating entrepreneur exercises power as transformative capacity through a relational dialectic of control with the strategic ally/ partner/client. While in Proposition 1 above it is proposed that the non-predictive control an effectuating entrepreneur exercises is in the nature of a dialectic of control, conceptual clarity is obtained by understanding effectual non-predictive control as theoretically based on structuration. Effectuation describes how the entrepreneur's actions follow a non-predictive control logic, and structuration explains how such a control is possible among unequal parties primarily as a dialectical process that recognises the autonomy, and works on the dependence, of other major stakeholders. Strategies an entrepreneur can employ to manage, and lead, such a dialectic would decide the chances of opportunity formation as suggested in Proposition 3 above.

Method

This section discusses the three illustrative entrepreneurs selected, the inductive case study method used and results obtained. Ent-A ran a firm that built data warehouses on software consulting mandates and was entering the data warehousing software product business with 26 persons on the rolls at the time of data collection; Ent-B was starting up a documentation automation software business and had six persons in the team; Ent-C was setting up a forex trading software business with a four person team initially with a tie-up with a forex trader in the US. All three entrepreneurs were starting their first venture in New Zealand. The entrepreneurs were chosen for the variety of opportunity process outcomes: Ent-A's was a start-up entrepreneur's account of successful initial opportunity formation, Ent-B failed in his attempt to start up, and Ent-C was a start-up entrepreneur who first failed but subsequently succeeded in establishing a market opportunity. The varied outcomes of the three entrepreneurial opportunity processes provided a 'theoretical sampling' to examine the relationship between the effectuation and structuration approaches to understanding agent control in entrepreneurship. Semi-structured interviews were held with each of the entrepreneurs that lasted for about two hours after a preliminary meeting as an ice-breaker the previous week where the purpose of the research was explained and formal letters given.

The verbal data gathered were transcribed and coded for themes for effectual action through evidence of: (a) affordable loss limits setting, (b) strategic alliance action for partnering for technology or process or product sale/licence or as vendor supplier, (c) action at potential clients' end for any contingency resolution. Additional themes of 'bootstrapping', 'networking', 'precommitment' that emerged from the protocol, including any other that evidenced control effort, were added to the above and are explained after the data section in 'Data, Analysis and Results' below. Coding of the data was facilitated by working with the NVivo software that is particularly suitable for analysing qualitative data of small samples. While no direct question on control was asked, the illustrative data gathered were analysed to further understand the nature of control the three entrepreneurs garnered in effectual action. The control thus seen in their actions was examined through the structuration lens as explained in the discussions section tying in with the propositions made.

Data, analysis and results

Case 1

Entrepreneur Ent-A started working with an ex-colleague on a business in the software data warehousing space while at a multinational firm and quit his job within a year to be full time with the start-up business in July 1996. Having a two to three month contract for consulting and installing software was 'good enough to start' for Ent-A and his business partner who were the only two in the company at start-up. A year after starting up they found themselves considering developing their own software as a product, and decided to move from consulting to software business. They had recruited their first two employees by then. They started showing the rudimentary product to everyone they knew in the industry globally. An introduction to a mid-sized US bank came from their ex-colleague from the US who had earlier considered joining the firm. The US bank was given a few Net demos and was ready to buy the rudimentary product. Ent-A refused to sell, wanting to develop the product further along with complete manuals, etc. After a year they sold the complete product to the potential client that included a 500-page user guide and a 1500-page installation manual.

The verbal data show the effectual action from the entrepreneur. Starting with 2–3 months consulting jobs, this entrepreneur felt that analysing market potential was 'a waste of time and effort' and that 'there would never be enough information' and that one had 'just got to do it'. The knowledge that they could 'always take a real job' gave them the control over their own future, which also presupposes control over losses they will take, i.e., an affordable loss limit. The fact that Ent-A had no product but only an idea meant that he could not have estimated the possible returns from the potential client, let alone from the wider market. Later, after they spent six months or so developing a product, they 'decided to do a bit of a check to see whether or not it was viable software to sell'. They knew the product was at idea stage. Approaching a specific possible user for feedback during product development well before finalising the product was aimed at getting control over potential losses of misdirected development effort. Control over the potential for gain was enhanced by building a strategic alliance through feedback cycles with the potential client rather than by estimating demand through market analysis. Here the entrepreneur was gathering the future clients' precommitment to add to his own to reduce (i.e., control) potential loss as well as enhance potential gain. There was no crisis at the banking client's end that was reported but they could anticipate problems with their large customer base if processes were not made more efficient. Though there was little immediate crisis, this was what Ent-A exploited for the future to get user feedback for over a year to develop the product. Nevertheless, the entrepreneur seems to have taken a sizeable risk of losing the first major client almost before they started ('you ran a large chance of it not working because it wasn't a proper product') and may well have lost this prospect while they were developing the product ('They were interested yeah, but they were hardly waiting on tenterhooks waiting for our call. So we had to get back on their important list again. We hoped we wouldn't lose them'). The entrepreneur's effort all along was to network for market access, i.e., getting to the next customer through client references ('the best way to do it, i.e., get a 'lighthouse customer', is networking'). Ent-A looked upon this early large client as a reference/'lighthouse' customer to network further attempting a strategic alliance of a higher order. In terms of funding the start-up, Ent-A always bootstrapped to self fund the operations ('we funded ourselves in the beginning, in fact we still fund ourselves'); their original on-site consulting work helped fund product development.

The start-up initiatives of Ent-A showed effectual action without much time or effort being spent on analysing the market or predicting it. Building the product, with on-going customer feedback, both limited loss potential and enhanced the potential for gaining major initial custom through this alliance, exploiting an anticipated/possible future contingency at the client end, and getting clients' precommitment to add to the entrepreneurs' own precommitment. Limiting of loss potential was also achieved by bootstrapping all the way. The number of effectual control occurrences was identified in the data coded for evidence of the effectuation sub themes discussed above: Affordable loss setting including bootstrapping, strategic alliance action including networking, exploitation of contingency including extending influence over potential customer, and precommitment from self and other stakeholders. The high total occurrence of these sub themes indicated a high level of effectuation for Ent-A.

Case 2

Ent-B built a document automation wizard software and attempted early on to establish a market opportunity in the US trying to break into market channels there which he found difficult to do. Meanwhile he became a Microsoft Gold Certified Partner (MGCP) and started to focus on using that as a channel for custom. However, Ent-B failed in his initiative to establish a start-up opportunity through such an alliance with Microsoft in the US market. He said the experience taught him that '...you need a specific person with a telephone number and a name' to start an alliance, confirming that a typical effectual strategic alliance making was lacking. Beyond preferring strategic alliance to competitive market analysis as a strategy to enter foreign markets, Ent-B did not provide much other evidence of effectual action such as contingency exploitation. Data from Ent-B also did not provide much bootstrapping evidence as cash available from early angel investors seemed to dilute his motivation to bootstrap and set affordable loss limits, a usually inevitable aspect of starting up. It was only when things went too far wrong that these loss cutting limits were being set by the angel investors.

What is evident in this entrepreneur's case is weak effectual action resulting in a lack of control which was seen in his statements, like: 'Looking back at the experience that we had trying to partner with a company who had a dedicated team whose goals were to partner but on their terms'. This entrepreneur went to Microsoft quite early and attempted to do business on the strength of the visibility obtained through the Microsoft website. However effectual action of enhancing control over the environment did not eventuate. There was no obligation on the part of Microsoft as an alliance partner, and the entrepreneur could not influence to enhance Microsoft's engagement (pre)commitment. While this was more than a standard alliance whereby a smaller firms, like Ent-B, would be a Microsoft 'partner', it worked as little more than Ent-B's product brand getting a place on the Microsoft website. This could be good and got 'a terrific degree of exposure' but was too static and open ended to be a strategic alliance that Ent-B could influence and exploit; it lacked the effectuation driven control as Ent-B passively waited for market interest from visitors to the site. Effectual control of the sales environment has been Ent-B's constant problem, particularly with larger firms. For example, he mentioned that a company used their product without permission as a component and didn't even take their phone call when contacted ('they disguise it as being their solution.... now, the fact of the matter is that …. we can't even make a phone call to them, they won't take phone calls .. it is impossible'). While lacking the ability to protect one's product IP is a problem that all start-ups face, the contrast of this entrepreneur with Ent-A in the ability to influence the customer environment is apparent. Ent-B also mentions that while it was possible to track visits to his firm's product on Microsoft's site, there was no further control over the process or of taking proactive steps to follow up an interested visitor and convert it to an order. In fact Ent-B mentioned that he had no knowledge of how a certain customer tracked down his firm to make a purchase – evidence of a significant absence of effectual control. Ent-B lacked the effectual control of the start-up opportunities and felt one step removed from the market. He could not establish control over the alliance and the market process of building a relational precursor to forming a market opportunity and showing low occurrence of effectual control steps undertaken.

Case 3

Ent-C's is an interesting story of a start-up initiative that failed initially but was later successful. Ent-C had started training in forex trading to strengthen his hobby. However, not finding a satisfactory software for forex trading he soon got interested in it as a possible business area when he explored it with a software developer friend, and started developing the trading software. The fact that the developer started product development seriously only when Ent-C had already approached the US broker-trainer to sell such a product shows Ent-C was stepping into a business start-up prospectively with just an idea and no product to sell, an attempt to limit potential loss similar to Ent-A's action.

Ent-C was enrolled in a US training programme in foreign currency trading while he was in the early stages of building a foreign currency trading system. He showed the product idea to the broker-trainer. At the same time, he also offered the product to the forex trading trainees in the training workshop. The product was then only at idea stage, and Ent-C had offered a strategic partnership to his US broker-trainer quite early in their association. They together built the software product where the US trainer's contribution was financial and trading knowledge, and Ent-C's team contributed the software knowhow. Apart from the product selling arrangements, the US party would have a lot to gain in terms of scaling up his broking business that was reaching the limit of manual servicing, i.e., an anticipated contingency. However, the partnership did not eventuate, mainly because the US party 'had control issues' even after Ent-C agreed to give a large share of the product IP they would protect. Looking back Ent-C thinks he might have given too much as the US trainer-broker continued to use some of Ent-C's IP without agreement to do so even after the two severed their working relationship. Doing it again he 'would certainly be… a little more brutal with some of that legal stuff'. However Ent-C goes on to confirm the need for action with incomplete information or knowledge on how the other would react saying it is 'easy to see now….. but if you said specific things… but I don't know how I would have spotted those things'. More importantly, he added 'If you're not at all trusting it shuts down opportunities' – a confirmation of the limit of the effectuating entrepreneur's influence in an alliance effort and the relational aspect of effectual control.

After initial failure, Ent-C went over to the US to set up office there for better control of his US market penetration, and initiated alliance with a new partner which has now started off successfully. He has also taken the statutory qualification required for independent forex trading in the US that gives him control over the means required for his forex trading business initiative there. All this adds up to higher effectual control of his second initiative. The choice to go it alone if need be after acquiring the trading qualification enhanced his ability to control the effectuation process the second time around, and develop a more equal relational alliance process where trust had a place.

Analysing the verbal protocol, in order to first establish the levels of effectuation the start-up activities of the three entrepreneurs discussed above, the verbal data were coded for effectuation evidence on the themes of affordable loss, strategic alliance and contingency exploitation mentioned above. Further sub themes that were found within these were added, for instance, evidence of bootstrapping action was added to 'affordable loss', networking was added to 'strategic alliance' theme. These also find mention in Sarasvathy (2008) which confirm the validity of the additions. Precommitment is clearly a major aspect of entrepreneurial opportunity action in the effectuation literature (Sarasvathy, 2008) and was taken as a separate theme. The coding thus was done on the following themes:

- Affordable loss, rather than expected return: any action showing concern for costs including bootstrapping, and directed at setting loss limits were coded here.
- Strategic alliance, rather than competitive analysis: here all attempts to make specific alliance with persons or firms were coded including networking attempts.
- Exploitation of contingencies, rather than pre-existing knowledge: all actions that were aimed at fixing a problem at the potential client end or extending influence over potential client environment were coded here.
- Pre-commitment: as it is a strong indicator of effectual action and was coded separately. Actions showing precommitment from self as well as seeking/getting others' precommitment were included here.

Frequency of effectuation evidence identified through the above coding of the verbal protocol of all three entrepreneurs is summarised below:

High effectuation was evident in the actions of the entrepreneur Ent-A and Ent-C[2], while Ent-B showed low levels of effectuation in the protocol. It is pertinent that Ent-B failed to establish the start-up, Ent-A succeeded, and Ent-C succeeded after initial failure, relating levels of effectual action to successful opportunity formation outcome possibility. The next section which analyses what kind of control the actions of the three entrepreneurs show and deduces the nature of control associated with effectuation of start-up opportunity.

TABLE 1: EFFECTUATION THEMES CODED

	Borda count* of frequency/ occurrence of theme in data		
Effectuation themes in protocol coding	**Ent-A**	**Ent-B**	**Ent-C**
Affordable loss, rather than expected return	2	0	2
Strategic alliance, rather than competitive analysis	2	2	2
Exploitation of contingencies, rather than pre-existing knowledge	2	0	1
Precommitment (from self and stakeholders)	2	0	2
Effectuation instances	8	2	7

*To adjust for verbosity/loquaciousness of respondents the Borda count allows that the number of occurrence counts of a theme can only be a maximum of 2 (raw totals above were 28, 3 and 25).

2 Although there was a difference in the effectuation evidence of the two attempts Ent-C made, the overall evidence has been taken here for convenience as the argument of the paper does not suffer because of it.

Control: Evidence and discussion

With the data showing higher levels of effectuation being associated with the successful start-up initiatives in the above verbal protocol as proposed by Sarasvathy (2005; 2008), it is opportune to explore the nature of effectual control involved. In a typical successful start-up situation like that of Ent-A, the entrepreneur, while facing environmental isotropy and uncertainty about outcomes, brings certain resources of his/her own which include moneys to acquire assets and expenses, lost salary income as opportunity cost, and the sweat and the emotions, like Fatjo, described in Sarasvathy (2008, pp. 83-84). The entrepreneur's outlay is really his own dollar contribution, his time and effort, plus the emotional fallout of the process. This and the alternative income lost is what the entrepreneur needs to commit to. However this commitment needs to be made ahead of any knowledge of surplus generation and, in predictive causation based logic, appears as risk to the onlooker (also see Sarasvathy, 2008, p. 83): the entrepreneur needs to accept this cost *in advance*. To the extent Ent-A can anticipate the cost he sets mental limits to them as affordable loss he can bear. That is why Ent-A is in a hurry to 'fail fast or make it work'. Even if Ent-A went far wrong in the amount of precommitment he makes and the opportunity does not materialise, Ent-A says he could always go and 'get a real job'. This entrepreneur 'backs himself up', as he also did by keeping the consulting work going while negotiating with the first large potential client for the software product under development. With his resources, time and emotion in the venture Ent-A has made his precommitment and controls downside by backing himself up. He believes that he can get others (potential stakeholders) to precommit to add to his own precommitment as the venture needs it. With each iterative cycle the precommitment from Ent-A and other potential client stakeholders increase, Ent-A always adjusting the means-effects equation, and also ready to pull back to affordable loss limits. The entrepreneur takes a level of risk as a given in the venture at each stage, and continually works to enhance the set of means and precommitments to reduce the downside and raise upside potential as found by Sarasvathy, Simon and Lave (1998) in their study comparing entrepreneurs and bankers. At every iterative stage of the effectuation cycle (Sarasvathy, 2008, p. 101, see Figure 5.1), the entrepreneur adds the precommitment for the next stage, gathers other stakeholder precommitments and thrusts the venture forward some more. The entrepreneur thus attempts to 'control' the expanding means at hand in the dialectic with the environment of the venture, with the stakeholders including potential clients, yet allowing enough autonomy to potential client stakeholder to contribute to the opportunity shaping, enhancing the set of means. The opportunity (effect) emerges as this relational dialectic moves through such iterations of enhancing means.

Ent-B's actions failed to give him control either over the resources in terms of setting affordable loss limits or over the alliance or the client environment. With early angel funding and little incentive to bootstrap Ent-B's protocol did not evidence setting of affordable loss limits or control of downside losses. Nor was much control of upside potential seen in the protocol as the potential customers were only indirectly visible to Ent-B with weak alliance possibilities. This entrepreneur failed to control the means that was supposedly enhanced with the alliance as he had no control over the alliance partner environment or over the potential customer that saw his product on the alliance partners' site. Ent-B could not develop a controlled relational dialectic in the opportunity action.

Ent-C, like Ent-A, bootstrapped from the start and introduced his prototype product to potential buyers risking loss of IP. He attempted to extend control over potential US broker-trainer client by offering to scale his business exploiting a weakness or contingency of the potential client. The partnership did not materialise. Ent-C failed to extend control over own means, and over the potential partner's precommitment in a relational dynamic because his own means were weak. He subsequently augmented his own means by taking the statutory qualification needed to trade in the US himself. He also moved to the US to focus on setting up the business there, and his enhanced set of means gave him additional power to transform a new client relationship towards a business opportunity. In this case Ent-C's later action benefited from earlier experience, to enhance control over a market relationship that shaped an opportunity.

To summarise, while entrepreneurs in all three cases took market action, Ent-B could not extend effectual control over the market relationship or over the set of means gathered as precommitments from self and alliance partner and could not transform the environment and get other actors to comply with his wants. He failed to drive and control a dialectical opportunity process that dissipated. Ent-C, learning from initial failure, enhanced control over his own set of means and succeeded in using that enhanced power as transformative capacity to shape a subsequent opportunity through a control dialectic in a new market relationship. Ent-A was clearly able to exercise influence over the potential client environment and over a sufficiently enhancing set of means from the start. He ensured a strong dialectic of control with his potential client to give shape to a major early business opportunity.

The data does not allow concluding that entrepreneurial agency is the only determinant of a strong effectual control dialectic leading to start up success. To take the case of Ent-A, since their first sale to the banking client, his software product has not only improved but has also sold at a higher and higher price in a price-point discovery journey for over 2 years. However, thereafter Ent-A and his team gradually realised that they were having to work hard to find the specialised buyers for the product the main reason for which was the Oracle platform it was built on. It meant that a buyer organisation needed to have a high level knowledge working with Oracle. This made the product specialised by its very construction while the market was getting structured differently, in terms of user-friendliness, leaving many potential users out of the market for this product. The high penetration of the potential market became more and more implausible. Over the next two years Ent-A migrated the product to the MS SQL server – now it supports both platforms for data warehouse building – to better match his potential clients in a market evolution that Ent-A's agency could not transform back to earlier conditions favourable to him. Ent-A's was thus a case of control of a start-up effectuation process over 4 to 5 years that can be seen as a dialectical interaction between the various parts of the venture environment of resource, market structure, and the effectual agency of the entrepreneur. The agency of the entrepreneur's control is one of the drivers of the control dialectic in the opportunity process rather than being solely responsible for it. This is seen in all the cases discussed with Ent-A and Ent-C successfully managing the dialectic of control with environment and Ent-B's attempt dissipating the same.

Conclusion

Following the theoretical premise of unpredictability and unknowability of the future under Knightian uncertainty and consequently the impossibility of controlling the future, the paper flagged an apparent contradiction with the question: How does a resource poor start-up entrepreneur exercise control in opportunity effectuation? With qualitative data from three start-up entrepreneurs it is argued that the entrepreneurs' ability to have a relational dynamic in a dialectic of control with their more influential – usually large business – buyers is the essence of entrepreneurial agency driving effectual action. Even in an apparently unequal relationship dealing with a larger buyer firm, as in the start-up initiatives examined, the entrepreneurs use their power as transformative capacity to enhance resources through forming alliances and exploiting contingencies, and by capping costs, attempting to get others to comply with their wants in a dialectic of control in Giddensian structuration mode. An understanding of the relational aspect that explicitly recognises the autonomy of others to act in support or in opposition is vital in explicating the effectual control process in entrepreneurial opportunity formation.

The non-predictive control in entrepreneurial opportunity effectuation as seen in the illustrative cases, is the control over the here and now rather than of the unpredictable future; it is control over the means continuously gathered by the entrepreneur from self and others, the immediate potential client's precommitment validating a wider market acceptance possibility of the product. It is with this enhancing means, not just in terms of resources but also in terms of a relational alliance dynamic with potential stakeholders, that the entrepreneur shapes the opportunity. The control in entrepreneurial effectuation occurs in a relational dialectic of agentic power exercised in a structurational way as proposed above and as revealed here in the in-depth qualitative study of the opportunity process of the three illustrative start-up cases.

The paper has some limitations, the primary limitation being its dependence on data from only three cases. However, it is hoped that the in-depth qualitative data presented as illustrations to inductively support the propositions will generate more research in clarifying the effectual control concept. This paper contributes to a better understanding of the effectuation principle that explicates entrepreneurial opportunity formation, by clarifying that its central theme of non-predictive control is a structurational dialectic of control that is relational in nature, rather than the resource poor start-up entrepreneur's control of the future in a constraining environment. It also brings concept parsimony in that the concept of dialectic of control in structuration theory can provide the theoretical basis for non-predictive control in entrepreneurial effectuation processes.

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