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A Note on Cyert and March (1963) and Penrose (1959): A Case for Synergy*

Abstract

Cyert and March's 1963 seminal book is one of the two major economics-based theories of the firm that goes inside the 'black box' (the firm) – the other being the contribution of Edith Penrose. The two theories have differences, but also similarities, and substantial scope for cross-fertilisation that have gone unnoticed in the literature. In this note we try to integrate important ideas in both books, paying particular attention to the issue of 'excess resources' /slack, and (intra-firm) conflict. We then build on the integrated framework by delving into the nature of intra-firm conflict, the degree of intra-firm rivalry and the relationship between firm performance and 'productive opportunity'. We derive propositions common to the two theories, but also new ones, of import to our understanding of organisational growth and change.

Keywords: Behavioral theory of the firm, Edith Penrose, excess resources, slack, conflict, innovation

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I. Introduction

In the second edition of their 1963 seminal book, Cyert and March (1992) review 'developments in economic theory of the firm', post-1963 (the year of the publication of *A Behavioral Theory of the Firm* (BTF), 1963). They focus on theories of teams, control theories, transaction costs, agency and evolutionary theories. There is no mention of Edith Penrose's (1959) classic *The Theory of the Growth of the Firm* (TGF), or subsequent developments in the resource-based view (RBV) and its numerous variations (capabilities, knowledge-based, etc)[1].

In the years post-1992 Penrose's contribution and the RBV have acquired significant recognition, arguably challenging transaction costs, as the leading economics-based theory of the firm (see, for example, Kor and Mahoney 2000, Mahoney 2005, Pitelis 2002). While updating Cyert and March's account could itself motivate this note, our claim here is that, despite important differences (and in part because of them), Penrose's theory of the growth of the firm can be fruitfully integrated with Cyert and March's contribution, serving one of the objectives of this special issue, to bridge behavioral and (other) economic theories of the firm. In particular, we focus on some crucial, in our view, issues that concern differences, similarities and scope for integration, that have gone unnoticed in the literature. We then build on the outcome to provide propositions common to the integrated framework, but also new ones, of import to our understanding of organisational growth and change. Starting from differences, we focus on the issue of intra-firm conflict, and the related issue of the objective of the firm. On similarities, we focus on the issue of internal environment of the firm and the

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[1] Some RBV-related ideas appear in the discussion on Nelson and Winter's (1982) evolutionary theory (notably the concept of 'routine', see below), and also in a reference to Chandler's (1962) classic book, whose similarities to TGF have been noted by Penrose (1995) herself.

link with the external one, (BTF's 'imperfect environmental matching' and Penrose's 'productive opportunity'), and the issue of 'organisational slack'. We then discuss ways in which cross-fertilisation can serve both views, and the theory of the firm more widely, paying attention to the interaction between learning, 'slack', conflict and innovation. Drawing on Selznick (1957), Simon (1995), Gavetti and Levinthal (2004) and others, we propose that (the concept of) 'authority-hierarchy' may help bridge some of the apparent differences between the two views. Finally, we try to extend the integrated framework and provide some firm case examples in line with it.

The main arguments of the paper are;

1. Both the BTF and the TGF share the idea that firms are proactive organisations, that any examination of the firm requires looking at, and indeed starting from, the firm's 'insides', that firms read the external environment through an organisational filter, and that as a result, there exists 'imperfect environmental matching'. In TGF the 'productive opportunity' of firms refers to the dynamic interaction between the perceived by management internal and external environments. Both theories rely on uncertainty, limited rationality and learning. In TGF intra-firm learning explains the generations of 'excess resources'/slack.

2. In BTF intra-firm conflict is paramount, in the TGF it does not exist

3. In BTF intra-firm conflict and bounded rationality imply 'satisfying'. In TGF the existence of uncertainty, limits to rationality and multiple managerial objectives imply that firms do not maximize profits but they pursue the maximum feasible long term profit. The (watered down) profit motive is of essence in motivating management to use 'excess resources' that engender endogenous growth and innovation.

4. Given intra-firm conflict BTF predicts problemistic search. Lacking evidence in favour of the last mentioned, BTF suggests slack-enabled innovation

5. In TGF 'excess resources'/slack do not simply enable endogenous growth and innovation; they motivate it, given the pursuit by management of maximum possible profit and the fact that 'excess resource' can be put to profitable use at (near) zero marginal cost.

6. Agency-type theories fail to explain away intra-firm conflict. Organisational and psychological approaches, notably the work of Herbert Simon, goes a long way to explain how management can alleviate intra-firm conflict. 'Success' (for TGF) and/or slack (for BTF) can be a mechanism that facilitates intra-firm conflict alleviation. However, alleviation need not always imply elimination.

7. The TGF concepts of intra-firm learning resulting in excess resources that motivate endogenous growth and innovation are perfectly compatible with and can be incorporated into the BTF. Similarly, the concept of intra-firm conflict is perfectly compatible with and of importance to the TGF, as it can serve as an additional source of intra-firm learning. The more general concept of 'productive opportunity' puts together, BTF's concepts of 'imperfect environmental matching', the 'organisational filter', and the idea that firms are proactive. The emergent integration makes for a stronger theory.

8. The integrated theory predicts excess resources/slack-motivated, and problemistic search-induced innovation, depending, however, on the immediacy of the problem faced, and the degree of maturity of the line of business. In mature lines problemistic

search is more likely, whereas in growing sectors slack-induced innovation is more likely.

9. The integrated BTF/TGF requires refinement and elaboration of its concepts and ideas to include: the nature of intra-firm conflicts, the degree of inter-firm rivalry, and the relationship between firm performance and 'productive opportunity'. We suggest that all these (and possibly other) refinements help explain the likely use of excess resources/ slack and the type of emergent innovation.

10. In deciding what to do with excess resources/ slack, it is important for firms to determine whether the type of intra-firm conflict they face is antagonistic or syn-agonistic, and the relationship between their current performance and their 'productive opportunity'. Indicatively syn-agonistic intra-firm relationship alongside intense inter-firm rivalry suggest slack-induced innovation, while antagonistic intra-firm relationships alongside low inter-firm rivalry would suggest the use of slack to alleviate intra-firm conflict. High performance combined with 'bright' productive opportunity, would suggest slack-induced innovation, while high performance combined with 'dim' productive opportunity would point to the use of slack for 'discretionary expenditures' – defensive investments to maintain market power.

11. There exist firm case examples in line with the integrated theory and some of our refinements. However, 'operationalisation' remains a critical limitation of a theory that employs complex concepts, such as excess resources, intra-firm conflict and 'productive opportunity'. More needs to be done on this front, by ourselves and hopefully others too.

In the next section we briefly summarise the main arguments in the BTF and TGF.[2] In section III we discuss differences and similarities. Section IV explores grounds for cross-fertilisation and integration. Section V refines and extends ideas from the integrated theory, derives some propositions and discusses limitations and implications. Section VI summarizes and concludes.

II. BTF and TGF: The Main Arguments[3]

BTF and TGF are arguably the two most prominent economic-based attempts to enter the 'black box' (the firm). Coase's (1937) transaction cost explanation of the 'nature of the firm' is, arguably, more of an explanation of why the 'black box' exists, rather than a focus on its insides, and what Coase himself has subsequently called the 'essence' of the firm, "running a business" (Coase 1993). When it comes to the firm's insides, Coase goes barely beyond the recognition of two major (in his view co-operating) resources within the firm, entrepreneurs and workers (see below). In contrast, both BTF and TGF focus explicitly on the insides of firms. For Cyert and March (1963)

> "in order to understand contemporary economic decision making, we need to supplement the study of market factors with an explanation of the internal operation of the firm" (p. 1, emphasis added)

[2] We are particularly brief in the case of BTF to avoid likely overlapping and repetitions with other contributions to the special issue.

[3] For more comprehensive analysis of BTF and TGF respectively, see Mahoney (2005), Kor and Mahoney (2000, 2004) and Pitelis (2002, 2004a).

For Penrose (1959), moreover, one cannot even start analysing the external environment of the firm (to include the market) without a prior understanding of the nature of the firm, which is its human and non-human resources, and their interaction. In TGF "the emphasis is on the internal resources of the firm" (p5) and "it is at the organisation as a whole that we must look to discover the reasons for its growth" (p7).

Cyert and March summarise the three core ideas of the contribution of the BTF to be those of 'bounded rationality', 'imperfect environmental matching' and 'unresolved conflict'. Bounded rationality refers to 'limitations of information and calculation' (p. 214). It implies the need to set targets and try to satisfy these, as opposed to optimising the best imaginable solution. Firms attend to goals sequentially, and follow 'rules of thumb' and 'standard operating procedures'. Imperfect environmental matching suggests that human agency is not uniquely determined by an exogenously given structure – 'environment'. Accordingly, history matters, pointing to the importance of organisational adaptation. Unresolved conflict is based on the assumption that in organisations there exist multiple actors, with potentially conflicting interests, that are not entirely alleviated by contracts. Instead, individual and sub-group interests are continuously re-negotiated, with consistency being hard to obtain and sustain.

Important insights in BTF, among many, concern 'organisational slack', learning and innovation. 'Organisational slack' refers to the difference between the resources required to maintain an organisation and the resources received by a coalition within the organisation. Importantly,

> "success tends to breed slack. One of the main consequences of slack is a muting of problems of scarcity" (BTF, p. 189) "slack provides a source of funds for innovations that would not be approved in the case of scarcity but that have strong subgroup support" (Ibid)

Concerning learning and innovation, BTF attaches significance to the concept of 'problemistic search'. Search can be induced by problems, and lead to the finding of solutions, inviting the prediction that

> "relatively unsuccessful firms would be more likely to innovate than relatively successful firms" (BTF, p. 188).

This prediction, Cyert and March observed, was not supported by available evidence at the time. A possible solution to this problem of the theory was to reconsider 'slack'. By providing a source of funds, 'slack' could enable innovation. As 'slack' is normally present in successful firms, the latter would also be expected to innovate. Both 'problem-orientated innovation' and 'slack innovation' may therefore exist, the former being most justifiable in the short run, and linked directly to a problem, while the latter in the longer run, and related to major organisational problems. (Ibid)

While Cyert and March's claim explains why 'slack' may motivate innovation, it does not provide a general cause why 'slack' may also induce innovation. For example, particular subgroup demands may not necessarily be for innovation, but rather for discretionary expenditures. Such a general cause is provided by Penrose. Penrose's focus is on "the analysis of the expansion of the innovating multi-product, 'flesh and blood' organisations that businessmen call firms" (p.13), not on optimal price/output equillibrium of neo-classical theory. Such firms consist of human and non-human resources, under administrative authoritative co-ordination and communication (p.20). Human, and especially managerial, resources are most important. Resources can provide multiple *services*. Firms use their resources to perform *activities* that result in products for sale in the *market* for a *profit*. Firms differ from markets, their *boundaries* defined by the reach of authoritative co-ordination and communication (p.20). For reasons related to resource indivisibility and the 'balance of processes', firms always have *'excess' resources*. Importantly, moreover, the very performance of activities within firms creates new knowledge through specialisation, division of labour, resource-combination, teamwork and learning. This reduces the time required for the implementation of current activities, thus generating (further) "excess recourses", which are not fully utilized at any given point in time.

"Internal inducements to expansion arise largely from the existence of a pool of unused productive services, resources and special knowledge, all of which will always be found within any firm" (p. 66)

The cohesive shell of the organisation is of essence in facilitating learning. As 'excess resources' can provide services at (near) zero marginal cost (in that they have already been hired to provide services for a specified amount of time), they motivate managers-entrepreneurs to apply them to new activities, engendering *endogenous innovation and growth*. The profitable marketisation of innovations requires entrepreneurial thinking, which includes the identification and even creation of new markets. The external environment, markets and demand, are perceptions, 'images' in the entrepreneur's mind. Supply and demand are inextricably linked, as planned supply responds to perceived demand. There is a dynamic interaction between the perceived internal and external environments, which defines a firm's *productive opportunity* (p. 31). The direction of expansion is motivated and shaped by the productive opportunity. There are limits to the growth of the firm, but not to its size. The conception and implementation of expansion requires managers whose firm-specific knowledge is a prerequisite for the successful planning and implementation of expansion, who, therefore, are not available in the open market. This *limits the rate of growth* and explains the pre-eminence Penrose attributes to management.[4]

Important, for our purposes in this article, is Penrose's endogenous incentive to make profitable use of 'excess resources'. This is more subtle and powerful than the exogenous profit maximisation motive of traditional theory. While the two are related - the latter in part motivating the former – making productive and profitable use of employed resources is a challenge, because it can help upgrade the resource, because of the personal opportunity cost of (in)ability to delegate, and the socio-psychological reasons not accounted for by an exogenously imposed profit motive (Penrose herself favoured a broader explanation for the motive of firms, one that considers power and sociological factors, to include "the mere love of the game") (p. 30). This innovation motive and, through it, endogenous growth, also complements and strengthens BTF's claim that slack may facilitate innovation. In TGF excess resources and slack both enable and motivate endogenous expansion and/through innovation.

BTF and TGF both proved seminal. Cyert and March's "deviant concepts" (p.216) have been adopted by subsequent economic and organisational theories of the firm (see for example Cyert and March, 1992, ch 9) Simon (1995) and Gavetti and Levinthal (2004). The TGF has been of import in the RBV, dynamic capabilities, and knowledge-based theories of the firms, see for example, Kor and Mahoney 2000, 2004, Pitelis 2004, Mahoney 2005, Augier and Teece 2006. Despite obvious differences (and in part because of these), the two books-theories also provide substantial scope for cross-fertilisation (as noted by Gavetti and Levinthal, 2004). This is further pursued below.

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[4] Penrose applied her insights to mergers, vertical integration, industry concentration, small firms and industry organisation more generally, as well as to business strategy and government competition

III . BTF and TGF: Some Differences and Similarities

Considering that we are dealing with two theories that were written more or less at the same time, and that they have since been very influential simultaneously, the differences between Cyert and March and Penrose appear striking. In particular, while Cyert and March focus on intra-organisational conflict, there is none of that whatsoever in TGF. In addition, in the BTF intra-firm decision-making is crucial, with ‘rules of thumb’ and ‘standard operating procedures’ serving as carriers of knowledge. Given bounded rationality and conflict, the objective of the firm is the outcome of a negotiated process and is more about satisfying than optimising. In contrast, TGF pays little attention to internal decision-making processes, and maintains a (watered down) version of profit maximisation. For Penrose, firms do not maximise short-term profits, but seek maximum possible long-term profits, even in the context of limited rationality, uncertainty and multiple objectives (pp 27-30). This focus, and need for profit, is of essence to Penrose as it motivates the application of ‘excess resources’ to (endogenous) growth, without which the whole Penrosean dynamic would break down.

Despite such striking differences, there are important similarities between the two works, as well as a significant scope for integration. We start by exploring what appears as the main difference: intra-firm conflict and (the employment) contract. We explore this in the context of debates in the extant theory, with an eye to identifying scope for integration and theory development, starting with Coase’s 1937 classic paper.

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policy (see Pitelis 2002 for an extensive discussion). Her views, moreover, have served as a basis for

In his 1937 article Coase defined the firm as a multi-person hierarchy, the nature of which was the ‘employment contract’ between employers and employees. Coase focused on the capitalist firm, as opposed to either non-capitalist firms or other firm-like forms of early capitalist production, such as the ‘putting-out’ system. He went on to explain the ‘employment contract’ in terms of transaction-costs-related market failures. He regarded efficiency/productivity benefits that arise from savings in transaction costs by firms as the reason why labourers ‘agreed’ to work under the authority/direction of the capitalist-entrepreneur. Later, Coase (1993a) regretted his emphasis on the ‘employment relationship’. He claimed that this limited focus to the issue of the ‘nature’ of firms, while one should also look at the issue of their ‘essence’, i.e. in ‘running a business’. This involves not just an employment contract between capital and labour, but also using other resources and one’s own time and abilities to produce.

In TGF, Penrose paid attention to some aspects of Coase’s ‘essence’, having taken the ‘nature’ for granted. Penrose also focused on the capitalist firm, which she saw as a multiple-person hierarchy, by human resources or both human and non-human resources, for production for sale in the market. In this sense, there is, in her definition, more than there is in Coase’s, minus, however, the ‘employment relation’ - Coase’s ‘nature’. It is possible, however, to explain of the ‘nature’, in Penrosean terms, as a result also of efficiency gains, this time however, from the production costs side - namely as being the result of productivity enhancements, through endogenous innovation, knowledge and growth (see Pitelis and Wahl 1998). To the extent that dynamic (by definition, given Penrose’s focus on change) transaction costs can also be of relevance, it will be the overall dynamic transaction costs reductions alongside knowledge-induced productivity benefits that could explain the ‘nature’

Richardson’s (1972), seminal attempt to explain inter-firm cooperation.

of the capitalist firm, the 'employment contracts'. Importantly, in this synthesis, the very perception of when and how to reduce transaction costs can be afforded through intra-firm knowledge generation (see, among others, Fransman 1994). To assume that firms know this beforehand is unrealistic (and in contrast to for example Williamson's (1975) own focus on 'bounded rationality').[5]

The Penrosean input to the 'nature' story (knowledge-related advantages from intra-firm activities) is a (production) efficiency-based complement to the Coasean insight. However this still fails to explain the 'employment contract' -why labour 'accepted' to work for capital. Efficiency benefits *per se* are not sufficient to explain why one should accept to work under the authority of another person voluntarily, whether the relationship is contractual or predatory.[6] Perhaps more importantly, Coase and Penrose's focus on efficiency benefits fails to address the issue of whether and why employees 'identify' with organisational objectives and do not just exert minimum possible effort when working for someone else (Simon, 1995). This issue is addressed by 'agency' theory, notable contributions being Alchian and Demsetz

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[5] How for example can one be boundedly rational and still get it always right in integrating, and only if in so doing one reduces market transaction costs by more than one increases intra-firm transaction (managerial, administration) costs? Coase (1993b) himself considers bounded rationality (or any concept of rationality at all) as little more than nonsense!. We submit that the Penrosean insight helps address Williamson's 'inconsistency' and Coase's own dislike of the rationality concept. In Penrose 'rationality', too, is endogenously generated through perennial learning.

[6] Among those who originally dealt with this issue, notably Karl Marx, Frank Knight (1921), and Ronald Coase, the issue was why independent producers accepted to work under dependent employment for an employer-capitalist. Marx stressed capitalist coercion that created the proletariat through the barrel of a gun, with the helpful hand of the Crown through, for example, the farm enclosures. Accounts are in Hymer (1979) and in Heilbroner (1991). For Knight (1921) the reason is different attitudes towards risk. The risk takers insure the timid and risk-averse by providing them with a relatively secure income-wage rate; it is, in effect, a division of tasks. North (1981, 1991), for example, has sided with Marx and Hymer in adopting the predatory (not contractual – co-operative) perspective. Pitelis 1991 and Olson 2000 point to cases where coercion could go hand in hand with efficiency. It appears to us that Marx, Knight, and Coase are all correct! In deciding whether and why to be an employee, coercion (thus restricted choice), potential benefits (from transaction costs and/or production efficiencies) and attitudes towards risk are relevant and useful. One factor could be the

(1972) and Jensen and Meckling (1976). The issue here is that whenever there exists a 'principal-agent' relationship, like for example employer-employee, or shareholder-manager, and when the interests of the two parties are not ex-ante fully aligned, agents may have discretion to pursue their own interests. When this is the case, it becomes important for principals to devise means for aligning the incentives of agents to their own. For Alchian and Demsetz, the question is applied to the very issue of obtaining the productivity benefits of the employment relationship and it is used for a conceptual justification of the need for private ownership and control of firms. They observe that in any team effort, shirking is likely to occur due to difficulties with measuring individual outputs. To ensure productivity is not thus prejudiced, there is needed a monitor of team-workers. However, the monitor needs to also be monitored. To avoid an infinite regress situation, it is best if the monitor is self monitored, by becoming a residual claimant of any surplus left after expenses to other members of the team, etc., are paid.

Alchian and Demsetz address one of the most important issues in political economy, that of extracting labour from labour power, or, more generally, that of transforming work potential to work (see Simon, 1995). It is part and parcel of a broader category of issues that relate to potentially differing objectives, interests, etc. of groups of people. The archetypical form is that of the Marxian notion of class struggle. In the context of the factory system, this takes the form of the capitalist employer being able to increase the rate of surplus value by intensifying work and/or by introducing labour saving technical progress (see Marglin 1974). Divergent interests within firms are also recognised in 'managerial theories of the firm' (see, e.g., Marris 1996). Here the concept of different objectives by managers and owners is coupled with the

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superior ability-knowledge by one party in exploiting the benefits from specialisation, division of labour and teamwork (see Marglin 1974).

idea of managerial control, to lead to non-profit maximizing objectives, for example the maximisation of sales revenue, growth etc. [7]

The objective of our apparent detour on (the employment) contract and 'conflict' in economic theory was to show the range of different views on the existence of conflict and means of conflict resolution. Concerning the last mentioned, Simon (1995) observes that the focus of 'agency' theory on financial incentives and monitoring misses a very significant part of the answer to the question why employees exert often significant effort to promote organisational (not personal) objectives. Indeed, BTF (and BTF alone) questions any notion of optimisation and the possibility that (the employment) contract can fully alleviate intra-firm conflict. In reviewing post-1963 developments in the theory of the firm Cyert and March (1992) welcomed the influence that their ideas had on subsequent theories but also pointed to some of their remaining limitations. In particular, 'agency theory' 'gives a much smaller weight to limited rationality, as opposed to conflict' (p. 221), and indeed, 'agency theory has become a branch of game theory, while retaining a traditional orientation to the asymmetry between "principal" and "agent"' (p. 222)[8].

In all Cyert and March conclude that despite the influence of their work on subsequent theory, such theory has failed to address the problems they posed concerning limits to rationality and intra-firm conflict. The last mentioned, in particular, is not alleviated fully, either through (the employment) contract, or through incentive alignment, as described by 'agency theory'.

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[7] For development and applications of such ideas to wider economic issues see Coase (1960), Olson (1965, 2000), North (1981, 1990, 1991), Mueller (1989), Pitelis (1991)

[8] Cyert and March also welcome what they see as a link between the idea of information limitations and the idea of conflict of interests in transaction cost economics and those of routine, search and selection in the evolutionary theory of Nelson and Winter (1982), considering these as instances where their original 'deviant concepts' have been incorporated within more mainstream modes of thinking (p.216).

All the above could not be further from Penrose, where intra-firm conflict is simply assumed away. Penrose's attempt to avoid the apparent circularity of the argument that success leads to growth and growth to success by focusing on firms that 'successfully grow' (p. 77). Presumably firms that have grown successfully have somehow been able to alleviate conflict and/or to leverage it productively. If so, this still begs the question as to whether and how this can be effected. While Penrose's focus on 'successful' firms avoids the problem of her needing to analyse this issue further for her own purposes, the issue itself is crucial and arguably needs to be addressed by any theory that claims to focus on the firm 'insides'. We pursue this challenge in the next section.

Despite the apparently dramatic difference between TGF and BTF, there are also important similarities. These include the intended focus on the firm 'insides', the conceptualisation of the firm as a dynamic actor that aims to shape the external environments, the concept of the external environments being an 'image' or perceived through as 'organisational filter', the idea and role of 'imperfect environmental matching' and 'productive opportunity'. For example, for Cyert and March "the modern firm has control of the market; it has discretion within the market; it sees the market through an organisational filter" (p.1) Moreover, the issue of firm 'discretion' motivates, in part, one of the three core concepts of BTF - that of 'imperfect environmental matching'. Discretion over the market implies an interaction between external and internal. The 'organization filter' is reminiscent of Penrose's 'image'. Together, the three amount to Penrose's 'productive opportunity'. However, by far the most obvious, relevant and useful similarity between TGF and BTF concerns the issue of 'slack' and 'excess resources' and their role of firm growth and innovation. 'Excess resources' and 'slack' are fundamental concepts in both theories, and idea that has gone surprisingly unnoticed in the literature. BTF and TGF also share the focus on learning. Learning is paramount in TGF for the generation of 'excess resources' (thus) 'slack', and conflict resolution and/or innovation. This, we feel provides important potential for cross-fertilisation between the two theories, pursued in the next section.

IV. BTF and TGF: Some Scope for Integration

The total absence of intra-firm conflict in TGF is almost paradoxical, given, in particular, Penrose's implication to the managerialist literature (see for example Slater 1980). While TGF has little to do with the managerialists' claim that utility maximising managers strive for growth, one might, nevertheless, have expected that the issue of potentially divergent objectives might have received some attention. While Penrose might have needed to eschew from intra-firm conflict (which could well be a separate book), we feel that Penrose's analysis could be usefully enhanced by allowing intra-firm conflict to enter it.

Penrose's approach was to look at the outside environment through an organisational lens. She went on to posit a dynamic interaction between the internal and the external environment. The latter includes other firms, and Penrose went on to discuss the importance of oligopolistic interaction and inter-firm competition. In this sense, it is clearly in line with her own focus to look at intra-firm competition, too. As already discussed, this can take many forms and apply to many groups. Recognising this can help Penrose in various ways. First, it may provide an extra reason for thinking by entrepreneurs-management of how to address this problem – this of course is innovation-knowledge generation. Second, it helps explain-predict, at least partly, the direction and results of such thinking - innovation. An example is the idea that labour-saving technological progress, may be a result of entrepreneurial attempts to alleviate intra-firm conflict by reducing the size and power of labour. Last, but not least, intra-firm conflict may breed diversity of opinion which in turn may lead to creative tension, and thus be a source of new information and knowledge and productivity advantages (Pitelis 2002). Clearly, intra-firm conflict, could also have the opposite results; it may lead to non-compliant behaviour that could threaten a firm's performance, if not survival. In this context the question whether and how conflict resolution is effective and/or whether and how can conflict be leveraged to enable success, is of essence.

Importantly, the 'problemistic search' type of learning in BTF is the very reason used by Penrose to explain why there will be no limit to firm size, due to 'managerial diseconomies of scale'. The existence of such diseconomies is questioned by Penrose as she believes that managerial problemistic search will engender organisational solutions that would help firms keep long-term unit costs constant (see Penrose 1959, Pitelis 2002).

Crucial in the above context is the issue of 'organisational slack' and of 'excess resources'. Excess resources in TGF tend to automatically and fully be used for expansion. However, they could also be used to alleviate conflict. This is a type of problemistic search-related innovation. It lends support for the 'problemistic search' cum 'organisational slack' hypothesis of innovation in BTF. Indeed, as noted, both variants of innovation are present in TGF too. However, there are tensions that need to be resolved. Conflict alleviation requires informed, nurtured and effective 'agency', not just structure ('slack'). What motivates the use of 'slack' for conflict alleviation and innovation? In addition, under which circumstances will slack tend to lead to attempts to conflict resolution ('problemistic search') and under which to opportunity-led innovation. For BTF problemistic search induced innovation is more likely to be the outcome of short term problems while slack-induced innovation might be more prevalent for longer term decisions. Is this the only relevant distinction?

In addition to the above, both BTF and especially TGF tend to underplay non-economic ways of conflict alleviation. For example, the recognition of intra-firm conflict questions efficiency-only-based explanations of organisational change, including that of TGF. As for example argued by Marglin (1974), conflict may lead to a choice of technology that favours sectional interests, not necessarily organisational ones, for example labour saving technology and (as) labour control device, as well as other labour control devices. Such choices by management may in turn help intensify conflict. This may render crucial the role of non-economic factors that help establish shared morals and vision through; for example, leadership, ideology, legitimisation, shared vision, culture and enablement (see Simon (1995), Boddewyn (2003)).

There is little of that in BTF and TGF. In TGF, interest alignment appears to be in part ex-ante present, but also affected ex-post through managerial leadership and its ability to implant its vision to other groups within the organisation. Whilst this may well be possible it is neither self-evident nor cost-free. For example, BTF asserts the opposite- that conflict is simply always there. This points to the need to discuss in more detail leadership, ideology, legitimization and the effecting of shared values, beliefs and common moralities in organisations.

Concerning the use of 'slack' for conflict alleviation, TGF can be of further import to BTF. While organisation 'slack' can be used in principle by management to alleviate conflict, this requires knowledge. In TGF this is endogenously generated within firms. It also requires motivation and effectiveness. In TGF motivation is established through the possibility of putting 'excess resources' to use at near zero marginal cost. While this is problematic in that it ignores the cost of managerial time itself, which can be high and the belief in TGF of the ability of management to implement change can be questioned, (as it requires a degree of power asymmetry between intra-firm groups, and also a degree of managerial competence), both these are arguably plausible hypotheses to make (as well as being in line with, for example, Chandler's (1962) views). In this context, we feel that the importation of the above TGF concepts/assumptions to BFT can help bridge the two. In particular, it could be suggested that through the relentless pursuit of (endogenous) innovation and growth, productivity and efficiency, emergent 'organisational slack' can be used by management to alleviate conflict and drive innovation, as well as helping to establish shared vision, values and moralities.

This positive-sum approach to problem-conflict solution is closer to management theories such as the stakeholder and institutional approaches. It points to enabling employees (as opposed to control based "incentives")) as a managerial strategy for long term performance (Perrow 1986; Granovetter 1985; Powell and DiMaggio 1991; Clarkson 1998; Boddewyn 2003, Mahoney 2006), and even serves as a means of going beyond the 'constraint-plus enabling' perspective to a dialectic synthesis of the two. If so, conflict and contract are shaped, and both in turn shape, the relentless pursuit of productivity and innovation, which is itself driven by objective factors ('excess resources' and 'organisational slack' through knowledge generation) and subjective factors- agency (the pursuit of maximum feasible profit, power, recognition and the love of the game), by firms' management. Importantly, the very process of generating intra-firm knowledge can help management enhance its problem-solving capabilities. Managerial knowledge may serve as a means of going beyond 'contract' and conflict.

The above possibilities are supported by scholars such as Simon (1995), Selznick (1957) and others, but also work on the psychology of obedience, eg. Milgram (1963). For Simon 'agency' and transaction-costs-based theories ignore key organisational mechanisms such as authority, identification and coordination. Those are crucial in explaining why do employees so often exert themselves to satisfy organisational objectives, not what appears to be their self-interest. In his 'sociological interpretation' of Leadership and Organisation, Selznick (1957) observes that 'this process of becoming infused with value is part of what is mean by institutionalisation. As this occurs, *organization management* becomes *institutionalized leadership*' (1957, p. 138, original emphasis). Holmström (1998) too points to the variety of methods used by 'authority' to influence employee behaviour. For Loasby (1999), authority provides not only such inducements, but also a framework for problem identification and attempted solution, see Love (2000). Kogut and Zander (1993) see the provision of 'identity' as one of the major functions of firms. A substantial literature on 'trust' and 'social capital', both in economics and management, stress the role of trust in the building of social capital as a means of effecting common beliefs, norms and attitudes, see Organisation Science special issues 2001 and 2003 and also Dunning and Lundun (2006) for a recent extensive discussion. In addition, the pathbreaking work of Milgram (1963) and subsequent literature has emphasized the unexpected frequency of behaviour obedient to perceived legitimate authority, even when this behaviour involves breaking deeply held conducts of behaviours such as inflicting harm on others, see also Gross (1990) for critical analysis.

Crafting organisational, sociological, cognitive and psychological elements on our integration of TGF and BTF may help explain why and how management, when seen as a legitimate authority and 'hierarchy', can effect conflict alleviation and leverage human resources to enhance firm performance. This in turn will tend to engender excess resources and slack, which can be used in part to alleviate conflict, in part to motivate and enable them to put it to profitable use through endogenous innovation and growth.

To summarize, intra-firm knowledge generation can engender endogenous innovation and growth through the generation and leverage of 'excess resources'/ 'slack'. "Slack" may serve as a means of conflict alleviation alongside monitoring, incentives and rewards, but also motivational and psychological reasons for obedient behaviour. Besides motivating endogenous growth and innovation, slack may also enable it, given resource availability. Firms will lead to undertake both problemistic search and slack-induced innovations. Intra firm knowledge generation will inform management as to why, whether and how to leverage excess resources is as to alleviate conflict, breed success and engender a virtuous cycle of endogenous growth and innovation.

V. Extensions, Propositions,Implications, Limitations

Despite differences in emphasis BTF and TGF agree that 'slack' can enable-motivate both 'problemistic search' and 'slack induced' innovation. Penrose's discussion of the Hercules Powder Company (Penrose, 1960), supports this. Penrose discusses how the diversification strategies of Hercules away from explosives, were motivated by, on the one head declining demand for explosives post-world-war-two and on the other, the development by the company of capabilities in organic chemistry with important applications in other lines of business. Moreover, work on decision making (eg Buchanan and O'Connell (2006)) supports the claim that managerial competence improves with experience and "learning by deciding". Hymer (1970) explains how large firms discover how to discover. Even on the issue of planning and implementing take-overs, *The Economist* (3/4/2006) maintains, "practice makes less imperfect". By 'learning by taking-over', "companies such as Cisco and General Electric … have demonstrated that it is possible to learn how to take over others". Similar considerations apply for the case of other firm strategies, to include contracting (see Mayer and Argyres' (2004) work) on 'excess resources' and growth supports the idea that excess resources, engender growth and improved performance, Beamish and Gertzen (2006). The work of

Simon, Selznick and others shows how and why employees identify with corporate objectives. Psychological studies show that authority engenders obedience.

Less clear is whether and when will intra-firm conflict motivate innovation and if so which type. Also under which conditions will firms tend to use their excess resources in order to expand, and when they are instead likely to use them for other purposes. We submit that some answers to these important questions can be provided in part by focusing on the relationship between the nature of intra-firm conflict and the degree of inter-firm competition, as well as the link between 'productive opportunity' and firm performance. These two types of relationships draw on and extend the integrated views on BTF and TGF by refining and extending some of the ideas of the two theories. Starting with intra-firm conflict, this may be 'antagonistic' (like for example of the traditional Marxist class-struggle type), when two or more groups clearly feel that they have irreconcilable interests, or syn-agonistic, where the two parties may feel they have differences but within the context of an overall shared objective (like for example, top management and large shareowners). Clearly, in most real life cases the difference will be a matter of degree. However, our proposition is in line with Simon's (1995) claim that employees will tend to share more the overall corporate objective the nearer they are to the top. On the other hand, the degree of inter-firm competition can be high or low, depending for example on the strength of the "five forces of competition" (Porter, 1980). Using there as two dimensions there follows the following matrix.

[Insert figure 1 around here]

The unit of analysis here is a firm with 'excess resources'/slack that faces different types of intra-firm conflict and different degrees of inter-firm rivalry. In brief if intra-firm conflict is antagonistic and inter-firm rivalry is low, the firm is likely to focus the use of its slack resources to alleviate intra-firm conflict as this seems to be its major problem. If intra-firm conflict is syn-agonistic and inter-firm rivalry high, the firm is more likely to use its excess resources to produce innovations that keep it abreast of rivals, paying less attention to intra-firm relations. Syn-agonistic intra-firm relations alongside low competitive pressures, point to defensive innovations, aimed to protect the current situation and pre-empt potential rivalry. Finally, antagonistic intra-firm relations combined with intense inter-firm rivalry point to the need for the firm to kill three birds with one stone. This is likely to be difficult; it requires high managerial competence and resources and may lead to failure-exit.

While from the firms' point of view the cosier situation would be quadrant 1, it is arguable that for society at large the best quadrant will be 2. The policy implications are that, while both public policy and business policy, should strive for synagonistic intra-firm relations, public policy's objectives vis-à-vis inter-firm rivalry may differ from those of business. Public policy should seek to promote intense inter-firm competition and only allow temporary situations of low degree of rivalry, to allow firms to capture value from their innovations, thus maintain their incentive to innovate (Shumpeter, 1942 and Teece, 1986).

The use of existing performance (for example market share, given the focus on growth), alongside firms' 'productive opportunity' is also in line with and can be of use in refining-expanding our integration of BTF and TGF. In Figure 2, extant performance, (market share) can be high or low, and the 'productive opportunity', 'bright' or dim. Depending on their combination, different possibilities follow. Quadrant 1 is the best case scenario for firms. Here bright 'productive opportunity' combined with high market share, thus 'excess resource=slack' would imply opportunity-related slack-induced innovation. High market share alongside dim prospects would point to defensive innovation to protect market power and discretional expenditures to alleviate intra-firm conflicts. Low market share with bright prospects would suggest a need to focus fully on growth, while low market share with dim prospects would point to the issue of possible exit-closure. As ‘productive opportunity’ is likely to be linked to the degree of maturity of the activity, with maturity implying more intense price-based competition (Teece, 1986), the degree of maturity of an activity can be usefully added to the short-term-long-term focus of Cyert and March.

[Figure 2 around here]

Our integration of BTF and TGF appears to be in line with the experiences of firms. For example, in the case of Hercules Powder Company, examined by Penrose (1960), problem-related innovation and slack-induced innovation coexist, but in different types of activities. For example, declining demand for explosives in the mature (and post-war) explosive sector, induces problemistic search that involve the use of existing competencies in related activities. On the other hand, and simultaneously, the invention of the new chemical CMC lead to the search for new markets where the new chemical can be put into use. This search involves among others, one of the firms’ most innovative market identification techniques, namely advertisement in the national press that describes the potentially useful properties of the new substance and asks the question “what do you see in CMC?”!

Similar considerations apply in the case of EMI, discussed, for example by Teece (1986), Bartlett (2005). At the very time that EMI was considering diversifying from a naturing business, to other activities, within the UK and abroad, the invention of the CT scanner, with its possible applications to the medical equipment sector, leads EMI to undertake foreign direct investment in the USA. Here the pursuit of risk diversification motivates the use of a special R&D department that works on technologies that could hopefully lead EMI out of a market sector (problemistic search), while its use of ‘excess resources’ for this purpose, result in an (almost accidental) invention, with applications in a potentially highly lucrative activity.

While problemistic search underlies the original motivation, ‘productive opportunity’ engendered by the use of ‘excess resources’ leads to slack-induced innovation.

Firms with high market share but dim productive opportunity, like for example DeBeers, are widely accused of using slack to entrench existing market power positions. Small growing firms, often emphasize growth, consider for example Canon’s and Komatsu’s attempts to compete with Xerox and Katerpillar. Successfully growing small firms in such a context may face the potential trade-off between lack of resources and expanding their productive opportunity. A successful case example is Solarton, a high-tech UK electronic testing and measuring equipment firm, led in the early 1950s by John Bolton. Within six years Bolton has been able to increase the number of employees from 15 to 1500, by fostering growth through pioneering research into optical character recognition. This explosive growth through R & D required funding that eventually led to the sale of the company, for twenty times the initial investment, despite the ‘failure’ of Solarton to post any serious profits. It sold its ‘productive opportunity’ and successful growth records, and has subsequently been sold to a US firm for twice the original deal only two years later (see Heavens, 2006). Finally, firms that are characterised by dim productive opportunity and low market share, most likely to exit an industry (see Paraskevopoulos and Pitelis, 1995).

Support is favour of our intra-firm/inter-firm conflict matrix is more difficult to marshall-as the issue has not been addressed before, at least to our knowledge. However, our propositions seem to bode well with experiences from business history. For example, labour-saving innovations seem to follow intra-firm antagonistic relationships (see eg. Marglin, 1974). Privatisations are often motivated by the need to reduce the power of trades-unions and to shed ‘surplus’ labour. Firms facing intense inter-firm rivalry but with syn-agonistic intra-firm relationships, like Toyota, are major producers of radical opportunity-driven innovations.

Multinational firms that face antagonistic intra-firm relations, combined with intense rivalry, are often accused for choosing to relocate to other countries to avoid strong trade unions, while firms facing little inter-firm rivalry but potentially antagonistic intra-firm relations (a potential example being Airbus), are likely to use slack to alleviate intra-firm conflict. The difficulties encountered by firms facing intense intra-firm rivalry alongside antagonistic intra-firm relations are probably best exemplified through the experiences of various state-owned airline companies, for example, Alitalia, Olympic Airlines, etc. Invariably, the proposed strategy here is to privatise, restructure, focus, or exit from unprofitable routes altogether. An important consideration in such cases is that slack takes the form of 'excess labour' not 'excess cash'. When 'excess cash' is available, things are better, but not always easy. The recent cases of General Motors perhaps best exemplify the situation of a firm with high excess resources/slack in the form of cash trying to deal with antagonistic intra-firm relations, and intensifying inter-firm rivalry. As *The Economist* (8/4/2006) observes, the least of GM's current problems is to design and sell cars. Instead, the firm has to deal with a tough trades-union, the United Auto Workers (UAW), and a now bankrupt parts supplier (Delphi), whose workers know that GM is "sitting on a vast – though shrinking – mountain of cash" (p.69). In this context, GM's main interest/bias/option? is to wrest concessions from the trades-unions, or go bust, while the trades-unions want GM to dip into its cash, but not file for bankruptcy. Here the eventual community of interest lies in GM not going bust. However, the existence of 'excess cash' in this case, makes conflict alleviation more difficult. In such circumstances, excess resources turn into a problem, not solution. The focus of GM is now on inta-firm conflict alleviation, and/through 'carrots' (attractive compensation package for employees agreeing to retire) , or 'sticks' (threat to file for bankruptcy). With simultaneously intensifying inter-firm rivalry, "fears grow that General Motors will go bust", while "management and unions are locked in a mournful embrace''(p.69).

A major limitation of our analysis concerns operationalisation. Concepts used in both theories, as well as the integration and our extension, like 'slack', 'excess resources', 'productive opportunity' etc. are hard to operationalise, see Williamson (1999). However, some progress has been made (see for example Mahoney (2005), Beamish and Gertzen, 2006). Moreover, such problems are not specific to the TGF and BTF. For example, for Cyert and March (1992), in transaction costs too

"The flexibility of the definition of transaction costs tends to make the concept a more powerful tool for interpreting historical outcomes than for predicting future ones." (p. 221)

Such views may apply for BTF- and TGF-type concepts and arguments, yet this should not hinder their development and attempts to 'operationalisation', even when this serves more as a post-hoc explanation than for predictive purposes. On the other hand, 'operationalisation' can also help test some of the more predictive insights outlined above.

VI. Summary and Conclusions

The seminal contributions by Cyert and March and Penrose's TGF can help us identify and try to address critical issues concerning organisational change growth and performance. The apparently drastic differences between the two theories make the case for integration tempting and exciting. Examples include introducing conflict in the TGF, 'productive opportunity' in BTF, integrating the concept of 'excess resources' and 'organisational slack' of the two theories, using 'excess resources' and 'slack' to explain innovation and conflict alleviation, and intra-firm knowledge generation to explain enhanced managerial competence for conflict alleviation and the pursuit of more singular firm objective, like that of maximum long-term feasible profits, where feasibility also depends on the use of organisational 'slack' for coalition maintenance (i.e. organisational sustainability). The integrated outcome still begs a number of important issues to include the impact and role of conflict on the use of slack and innovation. We claimed that by distinguishing between the nature of intra-firm conflict and the degree of inter-firm rivalry we can derive interesting insights the abovementioned questions that go beyond the two theories and their integration. The same is true when we combine existing performance with 'productive opportunity'. Despite limitations, especially concerning 'operationalisation', but also because of them, our integration and extension appears to add useful insight concerning important issues on organisational growth and change. We intend to pursue this avenue for future research and hope to motivate others to do so. We feel strongly that a genuine integration and extension of behavioral and RB views is both feasible and importantly, essential for the development of a cross-disciplinary theory of the firm that bridges economics, organisational and other approaches to the theory of the firm.

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Figures

Intra-firm Conflict	Inter-firm Competition-Rivalry	
	Low	*High*
Syn-agonistic	Slack induces: defensive innovations – to pre-empt potential competitors (1)	Slack-induces: Opportunity-related innovation (2)
Antagonistic	Slack induces focus on intra-firm conflict alleviation (3)	Slack may induce attempts to deal with both, which is difficult and may lead to exit (4)

Figure 1. Intra- and Inter-firm Competition, Slack and Innovation

Firm Performance	Productive opportunity	
	Bright	*Dim*
High	Slack-induced Innovation (1)	Defensive innovations/ discretionary expenditures (2)
Low	Focus on Growth (3)	Exit? (4)

Figure 2. The relationship between current performance, 'productive opportunity' and 'slack'