

Patterns for enabling highly autonomous teams

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Abstract

The division of large entities into smaller parts is a reoccurring theme for pattern writers. The opening patterns of A Pattern Language – e.g. INDEPENDENT REGIONS - deals directly with this issue (Alexander, 1977). Similarly, many patterns of software design address the same issue, e.g. BRIDGE (Gamma *et al.*, 1995), INTERCEPTOR (Schmidt *et al.*, 2000) and UNITS OF MITIGATION (Hanmer, 2007) . This paper sets out to explore less hierarchical approaches to company structuring using the pattern form to consider the design and organization of corporations.

Drawing on existing, albeit less common, company design models the authors proposal several new patterns. The aim of these structures and patterns is to enhance devolved authority – a concept also known as self-organizing team, shared leadership or sociotechnical systems.

The authors argue that these models make for more responsive companies, more satisfying work and superior company performance. In particular, the authors address the how financial decisions can be devolved. In doing so the authors draw Amoeba Management, Beyond Budgeting, Agile and other sources.

Introduction

The necessity to divide a large entity into smaller parts is eternal and seemingly universal. This mereology runs through much of Christophers Alexander’s work on architecture, is a reoccurring question in software design and for those organizing, designing, companies. While many patterns have been written about architecture and software fewer have been written about corporate design. This paper directly addresses company design through patterns.

Western corporations in the post-war period largely adopted a canonical organisational model based on functional design. As such a company grows, it starts to enjoy some benefits of larger scaling. Physical resources become cheaper and greater specialisation allows for greater efficient. However, as the “scales” it becomes more difficult to manage the larger entity and some of the negative sides of scale become apparent. The hierarchy required to divide and manage the larger entity becomes increasingly steep and problematic.

Geoffrey West argues in *Scale* (West, 2018), hierarchies’ slow things down – information propagates more slowly, communication suffers, and decision-making

and the ability to react to fast-moving markets decays. West believes this slow-down can be deadly to a business.

Having seen these problems first-hand the authors began a search for alternative models which would allow a company to successfully scale while avoiding the pitfalls of growing hierarchies.

It turns out, history is littered with alternative models of organization. From Bata's in the 1890s, through Topeka in the 1970s to Buurtzorg in the twenty-first century there are recurring examples of different designs. There are at least three models for devolved authority that aim at reducing hierarchies: Agile, Beyond Budgeting and Amoeba Management.

Common to all these models is the cultivation of autonomy on different levels – allowing for decisions to be made without consulting through the hierarchy. Indeed, Alexander made similar suggestions in *SELF-GOVERNING WORKSHOPS AND OFFICES* (Alexander, 1977).

Now our question became – is there a set of necessary conditions that allows for this “right kind of autonomy” to manifest in a company? A logical place to start looking was examining the role of money and financials in this. For many teams, particularly agile teams, autonomy stops when money enters the picture. Teams have little say in how money is spent. This represents a serious limit to their autonomy. In Amoeba Management and Beyond Budgeting financial control is devolved too.

This paper and patterns seek to understand alternative organization forms which allow for autonomy and devolved financial control. We start by recasting Inamori's *Amoeba Management* (Inamori, 2013) in pattern form.

Motivation & Audience

“The patterns in this collection are a toolbox for building a beautiful company. We hope these patterns will enable entrepreneurs to produce more than just a place where people turn up to punch in and out. We want to create workspaces where people feel they're making a difference at some level, where they are free to be their best.” *Patterns for Building a Beautiful Company* (Rising *et al.*, 2002)

The paper sets out to explore less hierarchical approaches to company structuring. The authors believe this will be of interest to executives of companies engaged in scaling-up who seek to maintain the attributes of smaller companies. Perhaps more importantly, the authors hope that by capturing these patterns these ideas will become available to those that inhabit companies. In the same way that Alexander sought to enrol those who live and work in buildings in the architectural design:

“Only the people can guide the process of organic growth in the community. They know the most about how well or how badly the rooms and buildings, paths and open spaces are working. ... No matter how well architects and planners plan, or how carefully they design, they cannot by themselves create environments that have the variety and the order we are after.” (Alexander, 1975)

By pulling disparate sources together, and using the pattern form to recast the literature, we hope to make the ideas more accessible so employees can be more actively involved in the architecture of their companies.

Specifically, the authors believe that these forms can create more harmonious work environments and greater agility - where the term agility denote reactivity. Maintaining these attributes requires workers remain close to customers and engage in customer collaboration. Again, it is believed that the forms set out here will also contribute to customer intimacy.

Many advocates of the approaches discussed here claim – often with evidence – that alternative work structures can increase productivity. While noting this claim the authors are primarily interested in other benefits such as worker engagement and satisfaction, customer happiness, corporate sustainability,

In short, the creation of a beautiful company which has longevity.

Background

“Grow an Organization by Dividing It into Small Groups”, Kazuo Inamori, 2013.

The necessity to divide a large entity into smaller parts is eternal and seemingly universal. Alexander examined the question from an architectural viewpoint beginning with *Notes on the Synthesis of Form* (Alexander, Christopher, 1964), through *A Pattern Language* (Alexander, 1977) and beyond.

During the post-war period western corporations adopted a canonical model derived from Alfred Sloan’s design of General Motors. Companies contained divisions (e.g. Chevrolet and Pontiac) and grouped functions together within a vertical management hierarchy.

Yet alternative models have long existed. Such models divided the companies differently and devolve more authority to workers. Yet even in the nineteenth century the Bata’s shoe company of Zlin, now in the Czech Republic, was successful with self-organization (Končítiková, Culík and Staňková, 2014). Eric Trist coined the term “sociotechnical system” to describe self-organizing work practices like those he found at Haigh Moor colliery in 1947.

Researchers at the National Training Labs (USA) and Tavistock Institute (UK) examined alternatives to top-down design. Proctor and Gamble’s Gains Dog food plant in the 1960s and General Mills Topeka factory in the 1970s embraced these ideas and demonstrated impressive results. Yet these experiments failed to catch on and slowly petered out (Kleiner, 2008).

At the same time in Japan, Kazuo Inamori struggle to manage the growing Kyocera. His solution was *Amoeba Management*. Each business unit - which might number as few as 5 employees – is a separate entity with authority over product, money, and operations. Each unit is responsible for its own profit and loss (Inamori, 2013).

Unlike Bata, Gains and Topeka, Amoeba Management has proved successful and long lived. Under Inamori influence Telecoms provider KDDI and airline JAL have

adopted the system. Companies such as Fast Retailing (Uniqlo) have been influenced by the approach while in China Haider electronics and La Chapelle (fashion retail) have also adopted Amoeba management.

Since the late 1990s many of the ideas behind sociotechnical systems have resurfaced in the agile software development community with Scrum in particular advocating self-organising teams (Schwaber, 2004). Yet the self-organization of agile teams stops short of control over money.

Accountants too have recognised the need to rethink how companies manage their money. Since Hope and Fraser published “Who needs budgets?” (Hope and Fraser, 2003) the Beyond Budgeting (Bogsnes, 2008) movement has gone from strength to strength.

Across these disparate sources the authors have identified several reoccurring patterns. It is not enough to tell teams they are self-organizing or adopt quarterly rolling budgets. To be successful multiple pieces of jigsaw need to come together.

About the patterns

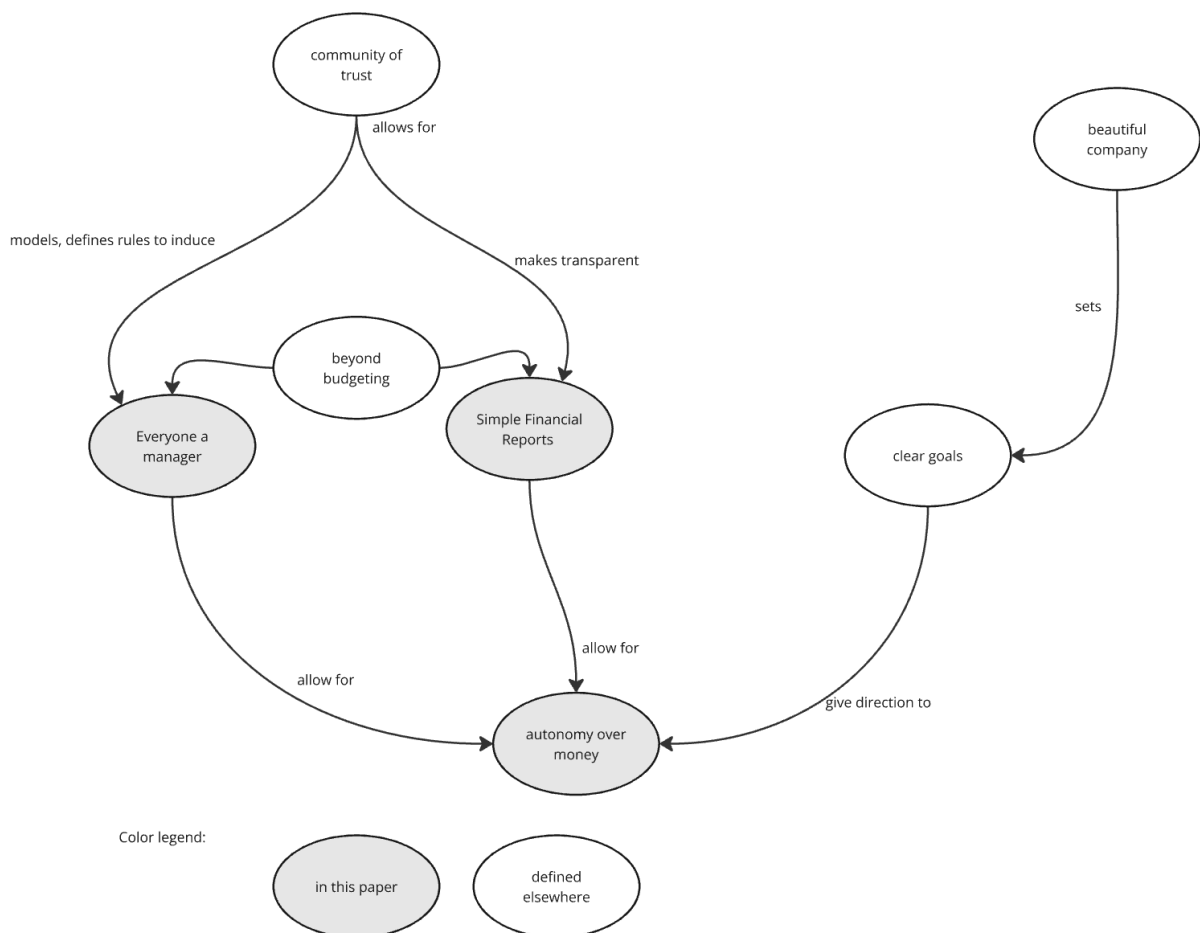


Figure 1 - Patterns and potential patterns

This paper starts by recasting the Amoeba model as a pattern based on the work of Inamori and later writers. It seems that many organizations are, through the adoption of agile approaches, drifting into Amoeba management without realizing it or considering the

implications for the corporation. Indeed, as Inamori writes: “The first of the crucial elements I will describe is probably the single most important factor determining the success or failure of Amoeba Management. It is the question of how to divide a complex organization.”

We note that many aspects of the Amoeba Management model resemble the Beyond Budgeting model (Hope and Fraser, 2003; Bogsnes, 2008). In effect both models may be regarded as an encompassing context. Similarly, the common Agile model also fills this role. Within each context multiple reoccurring patterns can be observed, e.g., goal setting. While some of these may already be captured by other authors (e.g., COMMUNITY OF TRUST (Coplien and Harrison, 2004)), others are captured here as early stage proto-patterns. Figure 1 provides an overview of concepts, patterns, and contains several proto-patterns yet to be researched and described in full. In this paper we go in more details on these patterns. However, this is just an abstraction and not a complete graph of all possible interactions. Our aim here is to highlight the emergent nature of autonomy. However, note that autonomy itself would contribute positively to i.e. intrinsic motivation and in EVERYONE A MANAGER.

AUTONOMY OVER MONEY

This pattern is about giving financial control to front line teams and staff



Context

The company is beyond the start-up phase, perhaps in the so called “scale-up” phase, consequently quick access to executive authority is difficult. In response to a fast moving market or uncertainty about product development, the company is passing more authority to individual teams. Thus company leaders are pursuing the logic of agile working, sociotechnical systems and self-organizing/self-managing teams.

Problem

How can a company maximize autonomy in business units (teams) – so they can react fast changing markets – when allocating finance and making swift decisions about money?

Forces

Devolving authority to those doing the work and letting teams self-organize has many benefits. Such benefits typically include greater employee engagement, greater productivity, enhance agility and responsiveness. But companies often withhold authority over money. Teams and units cannot make their own spending decisions. Such conditions limit the autonomy and the benefits of autonomy.

Business units and teams are tasked with creating and delivering value or other business benefits. Product teams will undertake requirements discovery and understanding customers in parallel with building a product. This reduces time between identifying the need and meeting the need. But when money is allocated before work begins and is earmarked for specific work items, this approach fails. Teams must work from pre-determined financial schedule and insights into the

customer's needs must wait – meeting a newly identified need would be a deviation from the pre-planned. Meeting a newly identified need may require a new business case. Only when new funding is secured a team start work. This all injects delay and limited team responsiveness.

Whenever timeliness of money decisions, level of detail, talent retention, uncertainty levels are high, the classical way to do top-down budgeting becomes undermines rapid progress, and can even threaten its survival in extreme cases.

Solution

Devolve financial control to the teams. Allow teams to spend money where they see it will deliver the best rate of return. Link team funding to revenues, e.g. teams collect product revenue, have team cross bill other teams or recognize cost savings.

Rather than fund defined work (and built a team around the work), fund the team to both discover need and meet that need. Agree objectives the team then trust them to spend - and collect - money as they see fit to meet that need. Teams can choose the work that will contribute most to meeting the objective.

Establish governance processes that prioritize team impact rather than financial control. Expect the team to justify cashflows regularly and measure success by progress towards the objective.

Consider EVERYONE A MANAGER and cultivate a management mindset. Team members will play a part in decision making so equip them with the skills they need. Team employees about company values, strategy, the basics of company finance and other skills which they need to partake in management.

Trust teams to spend money wisely, apply the FINANCIAL COLLABORATION pattern to establish simplified reporting systems all can understand and contribute to. Put in place governance and portfolio processes which leave authority with the teams while ensuring company values, strategy and alignment are retained.

Give teams clear goals and be open about financial targets - if a team's goal is to maximize income from a cash-cow product say so.

Consequences

Giving teams financial control enhances team autonomy, further local self-organization and enhances agility. Giving teams sight of incoming and outgoing cashflows creates a feedback loop which allows teams to measure the outcome of their decisions. Teams which control their own cashflows will quickly appreciate market forces and will be able to respond more rapidly.

However, compensating mechanisms may be needed to ensure teams still work as part of a wider organization. Teams may be autonomous, but they also are a part of a bigger concern. As part of a company teams are constrained by more than just market forces.

If a team strays too far from the organization, opportunities on both sides may be lost due to poor alignment and lack of standardization (economies of scale). At times a team may need to forgo their own best option – and largest cashflow - to benefit the wider organization. Conversely, a team may need support from the wider organization to achieve some goals. In the same way that companies may need external funding for expansion, teams may need funding and support from the wider company to achieve ambitious goals.

Moving decision making closer to the work - in time and space - allows teams to respond more rapidly to changed circumstances, i.e. agility is enhanced. At the same time the costs of control are reduced because fewer people need to be involved in approvals.

Known uses

The Norwegian Labour and Welfare Administration (NAV) have given some teams control over their own budget and trusted them to discover work and decide which work to do link (Mohagheghi, Lassenius and Bakken, 2018).

Autonomous product teams are cross-functional product teams and include business leaders and delivery engineers. Such a team owns its budget, product backlog and its prioritization. Reported benefits include: a feeling of ownership and mastery leading to increased employee satisfaction; faster response to changes; greater strategic thinking from team members; reduced technical debt because team members balance functional and technical improvements when making decisions.

Buurtzorg, a Dutch provider of nursing services, gives nursing teams control over their own budget and allows them to organize their own work. Benefits include higher patient satisfaction, lower costs - because patients need fewer nursing hours - and use of less medicine (further saving money.) Since adopting this model Buurtzorg has grown, maintained profitability, and ranked as "Best Employer" (Olesen, 2016).

EVERYONE A MANAGER



Context

The company has established, or are in the process of establishing, self-managing/self-organizing teams and want to devolve authority down to front line employees.

Problem

How is the company to ensure that decisions made locally, perhaps at speed, are consistent with company culture and align with broader goals and strategy?

Forces

When authority is distributed from the centre to smaller business units and employees, decisions and actions which were once the preserve of a few senior leaders are made by more people, more often and in a local context. But for a company to operate as a single, coherent, entity decisions need to be congruent.

Distributed decision making allows for timely decisions as they are needed, in the context and place they are needed, but without taking time to consult others such decisions may be inconsistent between employees and misaligned to company goals and strategy.

Front line staff are in the best position to make decisions, they have the most information pertaining to the problem in hand. But they may lack information about the broader company goals and financial consequences.

Solution

Have all employees adopt a management mindset. Employees must be supported in this mindset, given training and encultured into the company standards and

philosophy. A shared culture, with common values and purpose underpins decision making by all employees. The culture should also emphasize the common community of employees since all staff are dependent on, and need respect on one another. Use the COMMUNITY-DRIVEN LEARNING (Sauermann and Plummer, 2023) pattern to establish communities that learn, grow and align together.

Senior management should concern itself with setting culture, broad strategy and goals, ground rules of operation and interaction, and team/unit boundaries. The operating units are responsible for setting their own strategy and executing against it. Thus, while senior management sets the rules of the game, decides which team and business units to fund, and broader product decisions, they abstain from calling the shots on product-decisions.

Devolved decision making demands a common management philosophy which is shared by all and embedded in organizational culture and training. Few people are born with innate management skills so it is sensible to train employees in management skills so they may make management decisions. Such management training offers the organization the chance to elaborate on the common philosophy and create a shared culture. When teams are encouraged to self-organize there may be fewer dedicated managers but more people will have management responsibilities so more, not less, management training is needed.

Equipping all employees to make “front line” decisions – and to know when to consult others – allows decisions to be made locally and at speed. For this, the COMMUNITY-DRIVEN LEARNING pattern can be remarkably effective, as it allows for autonomous knowledge flow of relevant knowledge throughout the company. This then helps the company align naturally through shared understanding. Consequently, business agility and customers experience will be improved. Employees will benefit from more responsibility and more satisfying work.

Such management exemplifies “servant leadership” style advocated by Robert K. Greenleaf. Leaders establish guardrails and parameters – enabling constraints - so units can operate efficiently. It is more effective for managers to model desired behaviours and let others copy than to tell others.

For example, a leader who encourages exploration and learning through trial and error would more likely have a positive effect on the individuals around her, which in turn will generate more of that positive-charged leadership behaviour. Growing others, navigating them towards their strengths is more effective than trying to painfully correct weaknesses. A typical servant leadership approach can be a learned through behaviour, and then spread within a group of people emulating that behaviour.

Rather than controlling for work results, the governing part of a company can focus on enabling employees to pursue learning and growth opportunities. Employees are encouraged to discover and nurture their strengths. This in turn contributes to higher intrinsic motivation and grows a culture of shared leadership where everyone thinks like a manager.

At the same time the company can also work to restrict forces and practices that would work against the emergence of this culture. For example, yearly personal performance goals that can put people in hidden conflicts with each other. Hidden

because often personal goals are not disclosed, and there are few opportunities to co-create goals with co-workers. This can lead to undesired conflicts and friction, especially when goals are not transparent. Here the authors note that while this is easy to write, in practice many organisations are unable to change already existing practices like this one – there will be multiple forces making this difficult, including legal and financial reasons.

Consequences

When all employees share a common sense of purpose, management philosophy and culture, as well as knowledge and understanding, then all decisions, independent of who makes the decision, will be underpinned by common values which ensure decisions align.

By extending trust to employees allows decisions can be made when needed without delay. Mistakes are considered learning opportunities, both for the individual (to improve future decision making) or for the wider company – perhaps an opportunity to have even clearer goals or recognise that the strategy is working. Enhance the direct connection between employees and customer/users allows for greater focus on providing value to customers.

In trusting employees to make decisions companies can tap into employees' intrinsic motivations and cultivate entrepreneurial behaviours and ownership. This in turn will result in higher productivity and excellence. Over time such behaviour should be self-reinforcing creating a virtuous cycle within a company. However, this approach also demands of leaders to model such behaviour.

Devolved decision making will increase pressure on employees to perform for customer and the broader company. While this can produce improved performance it may also create stress and anxiety in employees.

Employees who engage in high-risk or unethical endeavours undermine the trust given and the criteria underpinning teams. Companies need to act when employees violate these boundaries. For example, at Haier, if a cell leader doesn't pay their employees, they will be removed as a leader.

Without respect for one another there is danger than “everyone” is interpreted as “no one” with employee relying on others to act. Culture, training and the sense of responsibility to the community can be used to guard against this.

Known uses

Fast Retailing, best known for its Uniqlo brand aim for all employees to think like a manager:

“I want our store employees to enjoy their life at work, and to do that, we must create environments where they can experience personal growth daily. ... We must create groups of people who want to grow as individuals and inspire others to learn and grow.

Our sales training is also management training. Even with excellent technology and high-quality products, and even if we meet customer demand, we will never move anyone's heart without that human touch. ...

All employees will be expected to adopt a managerial mindset and think hard about the experience they should be offering customers. They should communicate any ideas to headquarters for immediate incorporation into our business process. Our stores and headquarters will work closely together to change the way we do business, with a focus on front-line information." Tadashi Yanai, CEO Fast Retailing (Uniqlo, 2022).

The Japanese term Everyone a Manager translates to "everyone a manager" or "management participated by all the employees." This approach can be found at other Japanese companies such as Sekisui Kasei (Sekisui Kasei, no date). (Professor Ikujiro Nonaka has written about EVERYONE A MANAGER (Nonaka, 2015), unfortunately, as the work is only available Japan the authors have been unable to read it.).

In *Amoeba Management* Inamori writes of his desire to build a company where "all employees are managers" write of "cultivating a manager mentality in all employees."

SIMPLE FINANCIAL REPORTS

This pattern is about reporting: giving staff the information they need to think and act without overburdening them with complex reports and the need for training

Context

The company has established, or are in the process of establishing, self-managing/self-organizing teams and want to devolve authority down to front line employees. AUTONOMY OVER MONEY and EVERYONE A MANAGER patterns are being applied.

Problem

At the front line, how can teams and individuals make decisions that affect finances without spending time and energy learning accountancy conventions and how to read reports?

At the center, and simultaneously, how can the company know local financial decisions are not creating problems?

Forces

Money is important, profit is necessary for company survival. But, when money dominates it distracts staff from doing their job, delays decisions, limits customer satisfaction and rarely gives joy to anyone.

For teams and individual staff to exercise autonomy and act like managers they need to know about finance, they need to be aware of financial consequences and understand things like cashflows. But standard accounting reports and conventions make it difficult for the layman to understand what is happening financially.

Companies want staff to think like a manager not accountants. Staff could learn about financial reporting, but it takes time, is regarded by many people as boring and would get the way of staff from doing their own work. Even when they have learned about accounting reading reports is time consuming (and boring.)

Solution

Devise simplified, standard, financial reports which can be understood by all and which direct attention to company priorities. For example, positive cashflow, sales and costs. The things teams report on should be under their control so exclude items the team cannot change. For example, at Kyocera the *hourly efficiency report* excludes wages and bonuses because teams have no control over these costs.

Reports should be updated on a frequent, regular cadence so that they are relevant, and problems can be seen without delay, e.g. a surprise fall in sales. Automate data collection and report generation so that reporting does not become burdensome. (Standard ERP systems may require customization to enable such reporting.)

Reports should be understood by all employees, don't stick with accounting conventions which confuse people, e.g. amortization and exceptional transaction. Such conventions may be needed at the group level, e.g. to meet legal requirements, but don't complicate reports staff use to make team decisions.

Reports should be transparent both in their ease of use but also in their availability to others. Team members should all be able to see their own unit's reports. Reports should be visible to other teams and units so teams can appreciate and learn from others.

Where different amoebas work together on a common product, e.g. sales and production departments, a fair transfer pricing mechanism must be agreed which exposes both departments to market price. If, say, production was paid a fixed price by sales the incentive may be to reduce costs even if this impacts product quality and subsequently sales. Internal transactions amoebas operate as independent entities. Senior leaders may need to intervene to ensure both sides feel fairly treated.

Consequences

Timely reports which are available, and understandable, ensure that money is kept in focus. Making reports routine, automated, and less of a burden such reports do not themselves become a distraction.

Staff making decisions will have timely information which directly addresses company priorities. Cognitive load is reduced on staff because of the simplified, focused, nature of the reports. Consequently, they will have more mental capacity to think about what is right by the customer and company values.

Similarly, staff "think like a manager" training can focus on the company rather than financial and accounting.

Known uses

As Kyocera each amoeba must be fiscally independent, and employees are encouraged to be aware of unit accounting. The *hourly efficiency report* is a simplified reporting mechanism used by teams at all levels to report on costs and profitability. Amoeba leaders set monthly and annual targets by reference to the monthly report.

Beyond Budgeting seeks to allow business units more autonomy in setting budgets and controlling monies. All employees are encouraged to think like a leader and governance occurs through values and goals rather than budgets. Balanced Scorecard and other simplified reports are used to drive performance.

Extended known use: Kyocera

“While the company still had about a hundred employees, I could handle everything. What if I were to divide the company into smaller groups? At this stage we may have no leaders who can manage one hundred people, but we do have those who are becoming increasingly able to take charge of twenty or thirty people. What if I entrusted the management of small groups to people like these? ...

I could divide the company into the smallest possible groups capable of functioning as discrete business units, and place a leader at the head of each one. Each unit would then be administered independently, similar to small owner-operator workshops and factories.” Inamori (Inamori, 2013)

Today, 2023, Kyocera has approximately three thousand amoebas.

Kyocera corporation in Japan applies a model known as Amoeba Management which takes combines AUTONOMY OVER MONEY, EVERYONE A MANAGER, FINANCIAL COLLABORATION and other, yet to be described patterns.

The enterprise is divided into stand-alone business units of a limited number of people. Simultaneously the company works to instilling a unified sense of common identity and culture of working together, labour and management, without conflict. Each unit has its own leadership and all team members encouraged to adopt a management mindset. Units have a clear sight of revenue and costs so they can manage for efficiency and are be able to produce something that is of value to other units or customers even outside of the company.

Devolving power to autonomous self-contained business units while maintaining the sense of common purpose requires three supporting structures:

- Local planning, including budgets and financial control (SIMPLE FINANCIAL REPORTS), with rolling company plans for the longer term.
- A shared management philosophy which gives employees a sense of mission and an active role in management (EVERYONE A MANAGER).
- Promote connections to the whole, ensure leaders think of the company as a whole - even as they strive for success in their own unit. Use market prices for internal transactions so value is appreciated.

Over time cells will need to be rearranged - created, merged, dissolved - as demanded by technology changes, the changing economic conditions and competition in the market.

Inamori sets out three requirements when deciding on amoeba:

- Clear source of revenue and ability detail expenses pertaining to the amoeba so that each may operate as an independent accounting unit

- Only the minimal business functions necessary to operate as a stand-alone business
- Separation of amoeba must not hinder the objectives of the company as a whole

These criteria, particularly the final two, define a lower limit for the size of amoeba.

To give teams maximum autonomy they will need a high degree of financial control. This means the traditional budgeting model must be rethought. Budgets are, by design, a mechanism for control, and the formulation of budgets is an act of planning.

In Amoeba management Inamori advises to remove budgets and instil regular, simple, financial reports from each amoeba, e.g., highly efficiency report. Teams and departments undertake thorough monthly planning which includes financial plans. These build a monthly profit management cycle. These monthly plans sit within a fiscal-year plan which itself sits within a three-year rolling-plan.

Each amoeba creates its own annual master plan which starts with the objectives and goals of the amoeba for the coming year. These plans set out sales, production, hourly efficiency, market forecasts, product releases and more, as such they crystalize aspirations of the amoeba.

The Beyond Budgeting model describes similar rolling plans which are set at by teams and departments and nested inside broader plans (Bogsnes, 2008). The use of rolling plans allows information, and changes, to move upwards as well as downwards.

For both Inamori and Bogsnes employees, not finances, are central to the new system. Inamori states “Amoeba management stimulates ‘management by all’ [which] ... concentrates the powers of all employees.” Bogsnes offers six leadership principles to accompany six process principles which include: “Responsibility: Enable everyone to act and think like a leader, not merely following a plan.” (The EVERYONE A MANAGER pattern expands on this.)

Managers, and workers, must maintain a philosophy of both maximizing the amoeba but also benefiting the whole company. Although there may be a natural tendency to protect one’s own amoeba leaders, in particular, need to view the company as a whole. Having one amoeba succeed while others fail will not make a successful enterprise.

Aligning the whole company requires goals and specific targets. Cells will have their own CLEAR GOALS and targets which support organizational goals. Both Amoeba Management and Beyond Budgeting advocate the use of goals aligned with the planning horizons. Balanced Scorecards (Kaplan and Norton, 1992), KPIs or OKRs (Doerr, 2018; Kelly, 2023) might be used for goal setting.

Forces and consequences

Number and frequency of decision making: As companies get bigger, more decisions need to be made and decisions need to be made more often, but the human mind does not enlarge, and adding/involving more people creates more discussion and

debate initially, and more people to tell later. While this may improve decision making it does not make it any faster.

Success brings growth with more employees, customers and product. Consequently, there is an increase in complexity of decision making. But with more of everything it becomes harder to make decisions, more people need to be consulted and more factors considered. As a result, the organization becomes more sluggish and cannot respond quickly, or with agility.

Under Amoeba management employees and leaders inside each cell can make decisions fast due to the limited size of the cell, and the ability to manage its own resources. Having both proximity to the “problem to be solved” and authority over resources optimizes agility of decision-making.

Localized decision making, EVERYONE A MANAGER or “management by all”, with a potentially reduced number of people, makes for quicker decision making and quicker communication. Consequently, action and results arrive faster, and the company becomes more competitive.

For businesses in more volatile markets, the ability to make and act on decisions rapidly – with agility – is often more important to survival than always making the right, or best, decisions.

Employee motivation: In a small company staff feel involved, empowered, responsible, but as a company grows staff lose their sense of power. It can feel like being sucked into a black hole, there is a temptation to keep quiet, take the money and go with the flow rather than challenge. Financial and security considerations become more complicated and can inadvertently incentivize the poor behaviour leading to what has become called “quiet quitting.”

Involving employees shows they are valued, by giving people responsibility they are involved in making meaningful decisions. This will increase employee sense of involvement and should lead to happier employees with more motivation.

Still, making informed decisions requires up to date information on matters such as finances so implementing simplified reporting and Financial Collaboration is key to making the model work long term.

Cross-boundary work: Larger companies have more scope for specialization of skills and knowledge, but this runs against cross-functional working and shared results. To make head space for their specialist knowledge people allocate less space for exploring tangential areas that would be required to solve more complex problems.

Treating employees as managers, educating them and involving them in decision making challenges staff to think more broadly, beyond their silo and to “the bigger picture.”

Breaking away from safe silos can be uncomfortable for some people. Constraining the factors which need to be considered support narrow, focused, specialised work. Such work may suffer when silos are broken. Learning about broad, ambiguous, business issues may make it difficult to deepen specialist knowledge.

Distance to customers: Employees are able to become specialists in their particular field, e.g. accounts, but they are a long way from actual customers. Consequently, they may lose customer focus and lack the urgency required of modern companies – their senses are dulled. When specialists report into specialist executives with their own fiefdom this becomes more pronounced. Energy and time is wasted in navigating hierarchies and the unique personalities that inhabit them, rather than on meeting customers' needs.

Under amoeba management employees at large companies such as Kyocera – which employees tens of thousands – can find themselves working in a small unit which necessitates cross-functional working.

Culture change: Typically, young leaders of technology companies will know the technology but have little, if any, experience on how to scale their companies. But, while outsiders - whether experienced managers or consultants - can help scale the company they can also be disruptive, particularly of innovation cultures in young companies. Outsiders are likely to bring in a different culture and different management models. Consultants may be specifically hired to bring standardized models which have worked elsewhere but harm innovation and a unique culture.

Following an organized growth model to organizational structure and management techniques allows leaders to grow in abilities as the company grows with each generation learn from the previous. This helps propagate a successful culture. Unfortunately, where a culture is not succeeding it might need active disruption.

The issues outlined here collectively make the company more difficult to manage, which in turn makes decision making slower and more difficult. Delays in decision making lead to an increase in work-in-progress which further delays decisions and delivery. Yet when authority is devolved and staff trusted virtuous feedback loops can form which strengthens the organization and breed a desire for the whole organization to succeed and increase company harmony.

The amoeba structure facilitates piecemeal growth (Alexander, 1975; Coplien and Harrison, 2004): new cells can be created and existing cells expanded and bifurcated with minimal impact on the wider organization. The same holds when companies need to contract by reversing these processes.

Discussion

The Financial Autonomy pattern parallels the advice normally given to agile teams: self-contained teams which exhibit a high degree of autonomy and self-organization. However, the pattern also contains one key difference: financial autonomy is a key element to making the devolved autonomy work. As demonstrated by the examples, units, cells, need to have control over their own money.

The authors literature review of agile teams finds financial considerations notable by their absence. Neither have the authors - both experienced agile coaches - experienced teams which are trusted with financial matters. Indeed, as the following example shows the lack of financial responsibility is a hindrance to both self-organization and improvement:

Allan worked at a Belgian based international financial institute adopting “the Spotify model” where teams were told “you are masters of your own destiny” and encouraged to take more responsibility. To a large degree the model succeeded due to benign neglect. The senior managers, “Tribe leaders” were based in Brussels and had little interaction with the UK development team. The team was largely left to pursue their own course. It helped that the team was staffed with a Product Manager, Product Owner (junior product manager) and had an established, successful, product with multiple customers.

Yet the lack of financial control hindered the team. One quarter the team decided to improve quality. The team reasoned that reducing bugs, outages and customer calls would pay back in reduced effort, happier customers and fewer outages. The team decided the best way to reduce bugs was to adopt Test Driven Development, i.e. automated unit testing. However, when a “Squad” asked for funding for test driven development training they were told the “Tribe” was spending the training budget elsewhere. Despite being told the teams were “Masters of their own destiny”, they were not.

What can be further investigated is the effect on morale of this phenomenon of deceived expectations - realizing that something the company made a false promise probably has significantly worse effect on employee’s morale than knowing where you stand from day one.

During their research the authors have found multiple examples not only of cellular company structures but teams which are trusted with financial control, yet the examples identified so far are not sufficient to recognise patterns. Instead, we offer several prototype patterns which it is hoped will become full patterns when more examples have been identified and incorporated.

However, from models (Amoeba Management and Beyond Budgeting) and the examples found to date there are several recurring themes:

Leadership/Management behaviours	Inamori, Packard and Zhang highlight respect for the individual and the need to grow strong leaders within their systems. Still, setting the stage on which these leaders can emerge is a challenging question - how at the very least the communication style of leaders would be different - rather than leaders instructing others, we see more collaborative and eye-level style being incentivised and promoted
Young and growing companies	Inamori and Packard both describe their decisions in the context of young growing companies and the challenges they faced as leaders. This context resulted in them both creating innovative systems of organization and management.
Goal setting	HP emphasized Management by Objective.

	<p>Beyond Budgeting is often associated with Balance Score Card.</p> <p>Amoeba Management emphasizes the need for shared goals at multiple levels.</p> <p>Haier allows its micro-enterprises full autonomy as long as its decisions align with Haier’s strategy.</p> <p>It seems goal setting in cellular companies is crucial to their success and yet, the mechanisms for setting these goals might be different.</p>
Simple Financial Reports	<p>The Bata Management System and Amoeba Management both use simplified budgeting so employees can have a better understanding of company and market changes.</p> <p>The weekly efficiency report at Kyocera is a key reporting too while Equinor use a return on capital employed (ROCE) metric in a similar role. Such reports are a continuation of simple budgeting.</p>

The cells in Amoeba Management, couple with the devolved leadership and budgets has some resemblance to the franchise model used by the likes of McDonalds. Under this model McDonald's corporation owns and operates relatively few restaurants. Individual franchisees take responsibility for their own restaurants: securing capital and budgeting, staff recruitment, opening hours and many more decisions. McDonald's Corporation retains responsibility for strategy, branding, standards and training. To the customer there is one unified entity, but in reality, it is many.

A note on terms: teams and autonomy

The authors note the complexities of the *team* and use the term *unit to indicate a team*, or other autonomous business unit. Such units may be larger than one single team. Where the term “work system” appears, it is taken to imply “the system of work used by the team or unit.”

Additionally, the authors choose to talk of *autonomy* rather than *self-organizing*, *self-managing* or *self-directed*. There is no clear definition of these similar terms and those that do exist are not always consistent with one another. The term *shared leadership* may more accurately reflect the way leadership is practiced within teams and between levels of seniority.

The *Agile Manifesto* (Beck, 2001) claims “The best architectures, requirements, and designs emerge from self-organizing teams” and many, possibly most, writers on agile continue to use the term self-organized teams (Highsmith, 2002; Crispin and Gregory, 2009; Adkins, 2010). Highsmith differentiates between self-organizing

teams and self-managing teams. For Highsmith self-organizing teams exist within a “Leadership-Collaboration management model”. Managers retain the responsibility for “setting direction, establishing boundaries, assigning staff... establishing a multi-tiered decision-making process”. Highsmith equates “self-managing” with “self-directed” teams and suggests: “Self-managing cultures appear to abdicate management completely.”

Not everyone in the Agile community seems to agree with Highsmith. Scrum.org describes: “Self-managing teams are those who are given the autonomy to manage their own work. They determine what to do, who should do it and when it should be done. Agile leaders recognize that their role is not to “manage” the team, but to create the conditions that enable or support their team’s ability to manage itself... For self-management to thrive, there must be: Clear goals ... Clear boundaries... Clear accountabilities” (Scrum.org, no date).

As Pelrine (Pelrine, 2011) has pointed out: “Agile literature abounds with romanticised, subjective interpretations of terms such as complexity, self-organisation, emergence.”

Elsewhere Portman considers the terms as a scale. Self-organizing teams are charged with deciding the “how” and “who” while the “what” is decided externally. Self-managing teams add the “what” to their mandate. Portman then introduced *self-directed* teams which the additional authority to determine purpose and direction (Portman, 2022).

Complicating Portman’s definition he considers the Scrum Product Owner role to have the authority to determine the “what” for agile self-organizing teams. Which begs the questions: Is the Product Owner a Team Member? Or are they in some way external to the team? Are they indeed a Manager?

Looking beyond the agile eco-system, standard texts such as Mullins (Mullins, 2002) describes a *self-managing team* as “groups of three to ten people who work without any direct supervision” organized “into teams which cut across old boundaries.” Druskat and Wheeler (Druskat and Wheeler, 2010) describe self-managing teams as “basically left to run themselves with some guidance from an external leader.” They go on to suggest self-managing teams are synonymous with “empowered,” “self-directed” or “autonomous” teams.

In this paper the terms autonomous, self-organizing, self-managing, self-directed, empowered are taken to be broadly the same. The people in the teams, or larger units, are expected to have a high voice in deciding what, and how, the unit operates, and the unit collectively can reach agreement on what to do, the goals to persuade, and how to achieve those goals.

Defining a clear differentiation between these terms is would be a useful piece of further research. In addition, work clarifying whether Product Owner – and other roles which may decide the “what” – is considered a team member, or manager, and whether this positioning of this role changes a team from self-organizing into a self-managing teams would be most welcome.

A note on terms: Managers and leaders

"It has become fashionable to distinguish leaders from managers (Kotter, 1982, 2001; Zelenik, 1989, 2004). One does the right things, copes with change; the other does things right, copes with complexity. ... Frankly, I don't understand what this distinction means in the everyday life of organizations. Sure, we can separate leading and managing conceptually. But can we separate them in practice? Or, more to the point, should we even try?" (Mintzberg, 2009)

Like Mintzberg the authors of this paper note the trend to differentiate between leaders and managers; and fail to find them separable. All managers are leaders to some degree. Indeed, the role of manager is often conferred by companies to designated someone as a leader. Leadership is but one aspect of management.

Informal leaders can arise in almost any role without being considered managers. Without formal authority leaders rely on their own knowledge, experience, charisma or even dark-arts.

As Mintzberg describes management it "is neither a science nor a profession; it is a practice, learned primarily through experience, and rooted in context." Viewed this way management is a pattern rich environment.

The patterns in this paper can be viewed as management strategies drawing on both real-world examples and theory. The authors seek to communicate management practice and knowledge. Indeed, as self-organization and shared leadership proliferate there is a greater need for management skills in staff who are not managers.

The patterns in this paper require employees to show both more leadership and a greater use of management skills. While the authors have endeavoured to use the term management to refer to the more bureaucratic elements of leadership, they reject the separation of the two into distinct roles.

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Further research

In researching and writing this paper a large number of issues deserving of further research have become apparent. As already mentioned, more research on the **differences between self-organizing, self-managing and self-directed teams**, and the position of the Product Owner, would be most welcome.

Following directly from Inamori one must ask: **why have an organization at all?** Digital innovations in communication, and markets mean the boundaries of the firm are more porous than ever. This line of thinking leads not only to Alexander and his discussion of mereology but *The Nature of the Firm* (Coase, 1937).

When starting this paper the authors wished to contrast the amoeba organizations and companies with highly autonomous teams with "traditional" management

structures and “canonical” corporate. However, the authors were unable to identify any text setting out such organizational structures. It would seem that while advice for small companies abounds there is little in the way of organizational architecture discussion. Possibly this knowledge is relayed mouth-to-mouth and from consultant to executive.

Research is needed to **identify any original foundational texts** – the writing of Alfred Sloan and Peter Drucker might be a first stop. This would allow an **examination of the efficaciousness** of this advice over the years.

Rather than identifying one canonical form of organization it would seem logical that different organizations would adopt different forms, indeed one might expect to see patterns across organizations. Manufacturing companies may share common patterns with one another but one can expect professional services companies to follow different patterns. Indeed, patterns could, by creating a language and vocabulary, provide a solution to the problem posed by Henry Mintzberg:

“Imagine biology with no vocabulary to discuss species: how to distinguish, for example, beavers from bears without any word beyond mammal? This is the state we are in when it comes to organizations, in practice as well as research: we have little vocabulary beyond the word organization. How is a chief executive to explain to a consultant or a board member, “You are treating us like an A kind of organization, but we are really a B kind of organization,” when there are no commonly understood words for A and B? As a result, “one best way thinking” continues to prevail in management: if it’s good for the Royal Bank of Canada, it must be fine for Greenpeace (strategic planning anyone?).” (Mintzberg, 2009)

One might liken this problem to the situation which existed in object-oriented software engineering prior to 1995. In explaining a system an engineers might say “We do that thing were you encapsulate the request in an object so you can parameterize it with different requests – say queue or log requests – and you can then support undoing operations” rather than just saying “We use a Command pattern” (Gamma *et al.*, 1995).

The original intention of the patterns in this paper was to examine the role of money (including but not limited to budgets) in team autonomy. Several factors became apparent.

Firstly, despite all the discussion of “business value”, “biggest bang for the buck” and “value” few teams have insight or control over spending. To the surprise of the authors most examples identified were outside the technology arena. Thus, more research to quantify **how often teams have control over any money would be most useful.**

Examining the literature on agile working, and indeed project management and software engineering as a whole, it is the absence of discussion of money which is most striking. Entire textbooks on software engineering exist without discussion of how teams should perform cost-benefit analysis. **This raises two possibilities which deserve investigation.**

The **first possibility** is that budgets and spending have little influence on engineering practices and work management. This would explain the absence of discussion but seems at odds with practitioner experience. The **second possibility** is that budgets do indeed play a big part in how work is organized and managed in which case why is this absent from discussion? And perhaps more importantly, how can existing texts incorporate this fact.

Such research requires an **examination of the power structures** within companies and the drive to “empower” engineering teams with authority conflicts with the mandate to control spending exercised by administrators and financiers. At the time of writing, the debate about safety failings at Boeing would appear particularly pertinent.

While developing these patterns the authors have identified several other possible patterns – so called “Proto-patterns” – which may be written in future. At the time of writing these are tentatively named: CLEAR GOALS, AUTONOMOUS BUSINESS UNITS, COMPREHENSIBLE REPORTS, ROLLING PLANS AND SHORT DISTANCE TO CUSTOMERS.

Images

Opening amoeba image from Lake Yuno-ko, Japan, author NEON via Wikicommons https://commons.wikimedia.org/wiki/File:Nuclearia_sp_Nikko.jpg Creative Commons License.

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