The Collaborative Web: Building a Divergent Organizational Model for Research and Development, Based on 21st Century Notions of Employee Engagement

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Abstract--We describe the results of a 7-year management experiment in a small, high technology, research-services enterprise where the company moved from a traditional hierarchical management structure to a novel, researcher-centric, client-focused organization.

We challenged traditional organizational assumptions:
- Management is sometimes denigrated by technical leadership. So what is the meaning of "manager?" Is that concept still useful? What structure might take its place?
- Technical staff members are often not trusted to understand business. What if we explicitly engaged engineers in business planning and decisions?
- The technical skills of managers often decay, reducing their effectiveness in the long run. What if we share and rotate leadership in engineering?
- The value of technical staff is directly correlated to how well they stay current, which sometimes is at odds with longevity of staffing. What if we paid people based on the value of future results?

This paper will answer the questions of why did this, from whom did we draw insights, what we learned, and finally, whether we were successful in improving the value to the client and the engagement of our research staff.

I. INTRODUCTION

This is the tale of a small company, Galois, and its people (known as "Galwegians") who have successfully experimented with a radical new way of organizing work, which we call the Collaborative Web. Two of those people—Jef and Laura—offer this paper so that some of what we have learned and developed as Galwegians might be useful elsewhere, to bring some of the joy that we have experienced to others. We took our inspiration from the books Joy at Work by Dennis Bakke [1] and Maverick by Ricardo Semler [9], as well as the leadership of consultant Gloria Kelly of As-One. We share our experiences without thought that they will be generally applicable, but instead so that others may also be sufficiently intrigued to explore a different path.

We were motivated to begin our journey under the recognition that our business model was rather fragile: our own clients were telling us cautionary tales of a prior company like ours that had failed. We then experienced a long absence from the then CEO/founder, which exposed further weaknesses in the organization and management. From these experiences, we were motivated to explore organizational redesign. This was an opportunity for us to create a more responsive, agile organization to address some

of the limitations we had all experienced in organizations of the past.

What we did may also have worked using traditional management approaches. A controlled experiment was not possible. However, we fundamentally believe that form follows function and that people are capable of taking more authority, trust and respect than is generally given. And from that foundation, our journey began.

We start with a brief history, and follow with a compendium of the most interesting aspects. We focused on breadth, to give you a sense of the culture and organizational structure, as there are many interrelated parts. But that approach necessarily limits how much we are able to describe about each piece, and leaves us hopeful that this paper may be the start of a larger conversation.

And when we say "we" in the text below, we—Jef and Laura—do not mean the two of us. Rather, we are referencing the entire group of Galwegians, each of whom affects the course of the organization and participates in the experiment of the Collaborative Web.

II. THE CASE HISTORY

Organizationally, Galois was indistinguishable from most other companies, with a traditional hierarchical structure, topped with an executive team of four vice presidents and a president/CEO. At five years old, it had established a small research services business for the US government using advanced software techniques. Galois looked like a research lab for hire, and had some distinguished areas of expertise. The typical researcher had an MS or PhD in computer science, and a number of them had come with little or no industry experience. Complementing the researchers were a few applied software engineers, who added software product delivery skills to the mix.

In this area of research services, it takes a good two years with a client to develop enough trust for a significant business relationship. In fact, Galois was founded with an already-established client and a contract that had been based on successful research efforts within an academic institution, but for work that was better suited for a commercial enterprise. Most Galois contracts are time-and-materials based, and there is substantial technical risk involved in achieving the research goals. Thus the client bears most of the financial downside, and hence is usually quite selective when considering larger contracts. Once committed though, clients become very dependent on the specific technical expertise and experience of the company.

As is true for most start-ups, Galois' business decisions and sales were made by its entrepreneurial founder. Also typical of this stage of business was Galois' meandering through a variety of business opportunities, which is not a downside, but an agility that allows start-ups to tailor their offerings to emerging conditions. In particular, Galois relied on identifying areas where its distinguished technology might be applied. However, Galois did not focus on developing deep problem understanding in any specific client area.

Galois' reliance on technology as the primary selling point and its dependence on relationships with a very limited client set introduced challenges for long-term sustainability. In fact, there were client representatives that told cautionary tales of prior Galois-like enterprises that faded quickly once the technology became mainstream or a specific client decision-maker left the organization. So despite a relatively stable moment, Galois was not yet positioned for long-term success.

At the same time Galois was developing as an emerging business, there were organizational experiments going on. These were nurtured by a visionary business organizational consultant, who had become intrigued by Galois and was committed, even to the point of significant price discounts, to seeing if some of the disruptive ideas could be applied in a smaller enterprise, setting its culture up for the long run. Joining this consultant were a set of Galwegians who were interested in exploring a different way of orienting to work.

During the first 5 years, the seeds of organizational change started within engineering. At first, a single project group tried some revolutionary approaches, focused on eliminating managers, strong project management, and 1-1 nurturing of people. The perspective from elsewhere in the company was that "this will work only with that project team." As the scope of change grew to multiple projects, the refrain grew concomitantly to "...that subset of engineering" and finally to "...engineers." This slow growth of change allowed for experimentation on a small scale, based on the principles that were learned from Galois' consultant, reading, and coaching.

There was, however, a risk that no one had anticipated, that became the tipping point for the global organizational change and the work to build a company with a long-term sustainable business model. The founder/CEO/President became unexpectedly absent for an extended and unpredictably long period, and the executive team was charged with running the company in his absence.

This exposed pre-existing deep divides in values and approach amongst the executive team, where before differences had been arbitrated by the founder. Without such a single "decider", the executives struggled to fill in the gap. Sales depth was clearly missing, and although not urgent, the absence of the founder was felt in the business relationships. Critical errors were made affecting business in the upcoming year. Engineering continued to function extremely well to deliver quality results and keep clients satisfied.

When the founder returned, he gave over the operations to the engineering lead, Laura, who assumed the role of President and who now had the opportunity to bring the changes to the organization at large.

Laura's first action was to make a strong declaration—a citizenship manifesto for Galois—outlining the leadership principles at play and the implications of those principles for the way Galois was to organize its work. For every change considered, Galois sought a strong basis in principles and values, and strove to know what problem was to be solved before acting. However, the implementation of all of these solutions was not as neatly tied up as the descriptions to follow may imply. We made many false turns and faux pas during our work, but remained committed to one of our central principles... that of learning.

Cultural change of this magnitude does not happen overnight, nor even within a year or two. It takes time and persistence, and the change happens with day-to-day actions, not lofty vision. You need to "watch the feet" rather than listen to aphorisms to see whether change is happening.

The first cultural shift was to make it clear that decisions would no longer be made by the President. From the "watch the feet" perspective, this meant that every time someone would use the phrase "ask Laura," which happened with declining frequency in the first year, they needed to be prepared for questions right back about who would have the accountability, and thus the authority, to make the decision. And it was rarely, if ever, Laura.

The first structural change was to eliminate the executive team, and in fact, dispense with the traditional manager altogether, something that had already been accomplished within engineering.

III. NO MANAGERS

Given the long-standing uneasy relationship between engineers and managers, it is surprising that more companies have not experimented with switching up the organization.

In our experience, engineers are problem detectors, and don't have much patience for gaps in their manager's skills. Engineers often don't respect or understand the business side of the role of managers, so don't necessarily appreciate skills in those domains. To exacerbate the respect issue, as managers get further away from the technical domain, they lose effectiveness and relevance in the "coin of the realm" of an engineering team. Like it or not, engineers respect leadership that is current and understands the technical work.

The pool from which to draw engineering management talent is also challenging. Engineers are often promoted to management, sometimes with little or no aspiration for the job other than career advancement. This can result in either failure for a good technical lead who finds themselves in need of a completely different skill set, or dissatisfaction, as they drift away from the work they love. Often there is no easy "route back" to the technical world.

In the general context, our experience is that managers need to be good at three key things: managing tasks and projects, nurturing people and careers, and providing strategic

vision and context for the work. Finding one person who is skillful in all three areas is challenging, so most companies make do with managers that have strength in two, or sometimes even just one, of the areas.

But all of these are necessary to the success of any organization, so what to do? We reconceptualized the role of manager, separating those key components and letting different people with the best skills fill all of the needs.

A. Strategic Vision and Context

We believe that the success of the company hinges on aligning the interests and passions of the staff with the problems that clients are experiencing. To build strategic vision, then, the job is to deeply understand the client and their emerging domain areas and to project forward the course of technology based on the expertise of the researchers in these domains.

Things that might influence strategy—technologies, discoveries, ideas—can come from anywhere in the organization. They might emerge from a particular client project or skunkworks project, or research program, or from operational areas of the company. In addition, there are benefits to sharing results and infrastructure that may have originated in an isolated area to provide leverage across the organization.

To accomplish this well, we reached the conclusion that all strategic vision and context must be known and under the influence of *everyone*. This introduces a somewhat daunting job of collaborating to build vision, followed by continuous communication about what is happening to affect that course.

Galois pays an upfront cost in engaging Galwegians in the strategic conversation, and an ongoing cost in monitoring and disseminating results to course correct. However, the belief is, and it is unprovable except by anecdote, that this cost is more than offset by the good decisions that happen every day because of the deep knowledge of the strategy.

Tactically, we developed some approaches that helped each individual participate within their scope of interest to shape company direction. First, we divided the strategy temporally, as we've seen done in other enterprises. The discussion, however, for the 1-2-5-10 year vision is open to everyone who wishes to participate. There is a natural selection process at work, and the good news is that it draws people from most areas, so representation is fairly complete. To remove barriers to participation, it is clear that strategy discussion does not imply that you are obligated to write the strategic document, or continue beyond the initial input and review stage. Leadership of strategic discussions and the writing of the strategy are done by those most interested and best skilled.

To ensure that strategy remains at the top of everyone's mindset, implementing the strategy is a key result of all areas of the company. A clear line can be drawn between those results and strategy, and outcomes are measured against the strategy. This approach has implications for planning as well.

B. Nurturing People

There are natural attractors in every group: people who are sought out as coaches, with an easy listening skill and the ability to help others help themselves. Rather than leaving this to the informal network, and having this work be a sideline rather than a focus, we explicitly identified a *steward* role, a role held by such "natural attractors," as a means to intentionally connect people in this way.

It may be easier to start by explaining what a steward is not, rather than what it is. We are not augmenting a traditional human resources organization with specialists that act as stewards. Quite the contrary. Stewards are drawn from all areas, and reflect the natural diversity of backgrounds and interests in the company as a consequence. Being a steward is not a full time job, but rather a lightweight add-on, requiring between 5 and 20 hours a month depending on the number of people that are being stewarded. And the number can vary from 1 to 5 or 6, depending on interests.

Stewards do not function like a matrixed organization either. There is no natural connection among the people that may be in a steward's group. There is a long-term commitment between a steward and a Galwegian that survives organizational changes and shifts in responsibilities. Stewards may be connected with Galwegians across many functional areas, such as sales to engineering. What matters most is the trust between the steward and the Galwegian.

A steward is not a domain-area mentor. In fact, stewards may often function more successfully if they are not technical seniors for their Galwegians. The goal is always to help Galwegians help themselves, and if they are in need of technical mentorship for whatever reason, the steward is there to help them discover this and to seek the appropriate sources for assistance.

Now, for the more central question, what is a steward? Again, starting with principles, at Galois, Galwegians are accountable for their own career progress. Without managers, this philosophical perspective becomes much more foundational, as there is no "manager" to blame if a career is sidetracked. But as well, there is a human and corporate imperative to support building the individual skills and introspection necessary to taking this accountability.

A steward is there to help a Galwegian discover what is important to them about their work, and to be a coach to help them find what is important to them at Galois. The work of the steward is intentional, and stewards commit to a monthly steward education session and three years of stewarding before starting. Stewards are usually drawn from longer term Galwegians, who have already had the experience of having a steward. In yearly surveys, the steward relationship always ranks the highest in terms of what Galwegians value about their experience at Galois. Stewards provide a natural, long-term home base for individuals, regardless of the changes happening in the broader context.

In monthly sessions, stewards bring coaching questions and practice conversations that help people experience value from their work. The steward group has a human resources

specialist who can identify when a situation has potentially gone beyond stewarding and into the realm of personnel issues. The steward group has specific coaching responsibilities, such as checking that Galwegians have a complete set of work accountabilities and that they are seeking feedback from those to whom they are accountable. Stewards may be at the front lines when interpersonal friction arises, and can help Galwegians develop skills and explore ways to resolve such issues. Finally, stewards are measured best by asking how well they are able to "be the mirror" for a Galwegian, that is, to reflect back to an individual what they have already claimed is important to them, and to ask the question about how well their current actions are helping them to achieve that result.

Once a year the steward-Galwegian relationship is called on for an explicit recommitment for the next year, with a "no-fault" divorce acceptable from either side. In fact, sometimes shifting stewards after a few years has allowed Galwegians to grow in new ways.

The steward function is a deep recognition that each Galwegian is on an individual journey; that the value they seek is unique and can shift over time; and that fostering the personal accountability for reaching that value is the most respectful contribution that a company can make for its employees.

C. Task and Project Management

One of the most mature and well-understood aspects of the work of a traditional manager is that of task and project management. Here the existing hierarchical models work well, as large tasks are naturally broken down into smaller tasks and scopes. Techniques of project management can—and should—vary depending on the kind of work at hand. This is felt particularly in research organizations, where depending on the maturity of the technology, differing levels of oversight and risk tolerance are appropriate.

Since we chose to follow existing hierarchical approaches in this area, there is little to call out as unique here. However, one distinction from other organizations that we have encountered is the continuity of coaching provided by stewards, even when individuals move from project to project. They do not lose this continuity, no matter how often their project responsibilities change.

D. Key Benefits

One of our key observations is that through the elimination of management, we have disassociated the natural hierarchical breakdown of tasks from people assignments. This frees up all employees, including engineers, to make contributions at any place in the work breakdown, including crossing functional lines. Engineers are able to work in sales, marketing or finance, depending on their interests and developing abilities. The surprising, or maybe not-so-surprising, side effect is the expansion of the breadth of business knowledge and increasing cross-functional mutual respect this engenders in the organization. And each

individual is freed up to follow whatever their passions are, regardless of functional lines.

To help measure the effectiveness of the Collaborative Web we have conducted annual surveys. One question, rated on a scale of 1 to 6, asked Galwegians for their level of satisfaction with "strategy and direction of Galois." Prior to embracing the philosophy that strategy is under the control and influence of everyone, the average response was 3.9. In the years following the shift of approach, the average response was 4.8. Satisfaction with stewards has consistently ranked the highest of all questions, averaging a 5.5 response.

IV. AN "OFFERS DRIVEN" ORGANIZATION

Separating the traditional manager position into three parts removes some natural structure that one finds in a typical hierarchical organization. In order to work together effectively, we needed a new structure to ensure we are clear about the work for which we are responsible, and to whom we are accountable for that work.

A foundation of our structure is personal choice. We make our own individual choices about what projects we'll contribute to and other non-project functions we take on, in the same way we make individual choices about our career growth, as described above. We believe that the direction the company takes is balances the directions that individuals in the company desire to go and the strategic direction set by Galois (that is, by all Galwegians). This is especially true in our research business, where the services offered by the company are strongly influenced by the ideas and passions of the employees.

The mechanism we use to enable personal choice is a free market, where individuals can offer to contribute towards whatever work is currently needed by Galois. Thus the "goods" in the market are *results* needing to be fulfilled to perform the work of the company. Each employee is accountable to find work, by identifying the results they are interested in providing, and making offers to do so.

To whom do we make these "offers" to produce results? We use the term *customer*[1] to refer to other employees we are accountable to, and it's these customers who define the results to be achieved, and accept (or don't accept) offers. Each Galwegian might have several customers at any time, one for each result or set of related results. For example, I might be producing a software deliverable on the ABC project and accountable for that result to Joe as the project lead of ABC, and at the same time serving myself as a project lead for the XYZ project, the results of which I'm accountable to Susan to provide.

We aim to describe results as precisely and with as much detail as is warranted, so it is clear when a result has been met. That way it's well defined what I'm signing up for when

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[1] We refer to the company's customers as *clients* to avoid confusion about the use of the word *customer*.

I make an offer. We take care to describe results as the end state rather than the activities performed to reach that state. For example, a result for an engineer might be to produce "software that passes the client's quality standards" without prescribing the particular development and testing activities to be performed. This gives some freedom for the contributor to achieve results via whatever means is most appropriate, and keeps the focus on where the true value to the company is—not on the actions, but on the outcomes.

To help manage and reuse descriptions of results, we've developed a set of standard *role descriptions*. These are not job descriptions, but instead each specifies a single set of results that is commonly and repeatedly needed in the organization. Unifying the results for a role is a *concern* that someone holding this role is addressing. Here we mean "concern" in the sense of something we're taking care to address, rather than in the sense of something we're worried about. Along with the concern and results, the role description describes the capabilities a person needs to hold the role, the name of the role held by the customer of this role's results, and perhaps some of the typical activities used to produce the role's results.

Nearly all results throughout the company are captured, at least at a high level, in role descriptions. We've drafted about 100 role descriptions over the years, and about half of them are currently in active use, the others having been retired or subsumed.

How can I determine what results are needed by the organization? In our small company this in great part is visible via word of mouth, all hands meetings, technical talks, and other means of building common awareness about what's currently going on. To help facilitate this information exchange, we have a standard of *transparency* of all project information. Anyone in the company, whether involved or not with a project, can gain access to project objectives and plans, current status, budget data, or any other information about the project. As we'll see below, this notion of transparency is a part of other practices, as it is fundamental to our organization.

Some formal mechanisms are also useful to aid Galwegians in finding where they can make offers. Three times a year, we hold a "project fair" that gives everyone an opportunity to see the full spectrum of projects currently in execution as well as those projected to start in the near term. Project fairs are a lot like poster sessions at conferences, but with virtually no attention to poster cosmetics! These events help technical staff plan ahead to see what offers they might make over the next few months.

As one might guess, these plans don't always work out as expected, though, and a technical staff member might find themselves unexpectedly needing to make a new offer. For example, sometimes the skill set needed on a project changes over time, in ways that can't be predicted ahead (e.g. because of what we learn conducting research, or because of a particular client request). This can result in a short-term need for one to contribute to some other project or other area of the company. To help technical staff members find a place to make an offer, we have designated "matchmakers" who keep in touch with project leads and other customers to have a sense of what needs might be emerging, and to connect available Galwegians with customers seeking help.

Once I've identified the results I'd like to provide and make an offer to do so, my potential customer needs to consider whether to accept that offer. It's the customer's accountability to ensure that the performer will succeed, so it behooves the customer to determine whether the performer has sufficient skills, has enough time available given their other commitments, is a good fit with the rest of the team, and so on. Sometimes the customer and performer will negotiate a modified set of results that better suits current constraints.

After I negotiate the results with my customer, I write them down in a place reserved for recording my current results (we use wiki pages for this, but any recording mechanism would do). The recorded results are either taken directly from a role description or more specifically defined, and we also record the customer and the amount of time expected to perform those results. We do our best to keep these records current, supported by an annual process that gives everyone a chance to refresh their records. The value in recording results is primarily that it helps ensure the customer/performer conversations are happening, but as we'll see it also supports the compensation process as well as serving as a cross check that everyone does indeed have enough work to do, at least for the plan-able future.

As we mentioned before, we seek to balance the offers that employees want to make with the direction of the company. This is not always a perfect fit. For example, a Galwegian might be passionate about a topic and wants to pursue it, but it goes beyond the bounds of available work. So sometimes compromises need to be reached. Sometimes though, researchers can pursue their passions by writing funding proposals leading to future projects that follow that passion.

A. Annual Planning

The investigate/negotiate/record process is followed in another company practice: annual planning. We start by investigating what relevant and useful offers we might make to our clients, in general terms. This might involve pursuing a new market or delving into a new technology, and it might also involve continuing on with current pursuits. We capture our conclusions about focus areas for the next 12 months in a "Profile" document, consisting of just a few paragraphs of text. The Profile serves as a strategic statement across the whole company, scoped to the next year. All of our annual planning drives from what we say in the Profile.

Using the Profile as a guide, each functional area of the company writes a set of proposed results for the year. To do so, we start from scratch, using a zero-based budgeting approach. That is, we don't assume that this year's results will be the same as last years, or that functional area budgets

will be similar year over year. This gives us the freedom to create the *best* results to meet what we've identified as our *current* focus, without an arbitrary tie to the past.

The negotiating part of annual planning happens amongst all members of the planning team. We jointly look at the whole set of proposed results across all of Galois, along with budget estimates for each[2], to decide what (if anything) to cut or adjust to meet overall budget constraints while best pursuing the Profile. Required members of the planning team include leaders of all functional areas, but anyone in the company is invited to join in the process, and all interim planning products are transparently available to all. This allows everyone to be engaged in planning, and to see how their results contribute to the whole. Because annual planning occurs just before we all refresh the records of our individual results, the planning process ties in nicely with individual offer making.

B. Benefits

The benefits of an offers-driven approach include:
- Explicitly acknowledges the fact that the direction an organization takes is based on the direction each employee individually goes, and that balance is needed throughout.
- Leads to employee satisfaction since all have freedom of choice regarding the work they do.
- Encourages all to see the connection between their contribution and the company's success.
- Emphasizes accountability for outcomes, not activities.
- Brings visibility regarding individual responsibilities; it's impossible to "hide" in the organization.

V. COUNCILS

As mentioned above, we have seen problems in previous companies with engineers being promoted to management roles simply for career advancement, at the expense of job satisfaction and ongoing technical relevance.

Another problem we had seen in a traditional management approach is that decisions are centralized. This may appear to be an effective and efficient way to make decisions, but it can have negative effects beyond that of simply making a poor decision. One effect is building an "us-vs-them" mentality in the organizations. Decisions are something done "to" us by management. Also, the rationale for decisions is not visible to others, which eroded trust between managers and their teams.

We came up with an alternative to centralized decision making that also gives individuals in leadership roles the opportunity to stay current with the technical work. When the scope of influence is broad, and the impact of decisions far reaching to the organization, we formed a team of people to share the responsibilities, rather than relying on a single person. We call these teams *councils*.

Council members jointly take care of a set of ongoing concerns. As an example, our Engineering Council[3] holds concerns such as trustworthy project execution, outstanding engineering product, and the ability to meet emerging engineering needs of the company (e.g. via staffing). Note that these concerns are *really big*, with wide-ranging impact within the organization. The broad scope of these concerns is a motivation for sharing them, because by sharing we can benefit from multiple points of view and a variety of individuals' skills. And by sharing these concerns, each council member has room to perform in other roles in the organization, allowing them to keep their hands in the day-to-day work while leading it.

Notice that we said that a council holds a set of *ongoing* concerns. It doesn't make sense to form a council to work on a point-in-time issue or provide leadership for a time-limited effort. For example, we don't use councils to lead projects, or address one-off initiatives.

A. Council Practices

Every council has a council *charter*, to be clear about the concerns, accountabilities of the council to produce particular results, and authorities associated with those accountabilities. Council charters are a lot like the role definitions we talked about earlier. Our Engineering Council holds a role similar to what a Vice President of Engineering might hold in other small software companies, with full accountability for the results and health of the engineering team.

Each council has a *caretaker*. This person is responsible for keeping the council running effectively, including watching out for the health of the council as a team. The caretaker isn't the boss of the council--she doesn't necessarily make the decisions, but she does ensure that the decisions are being made. What the caretaker critically does is ensure that the council is working effectively to meet its concerns.

The caretaker also chooses who will be on the council, doing their best to ensure that all the needed skills and a variety of individual perspectives are brought into the council. We have Engineering Council members good at managing hiring processes, others who like to build and use forecasting models, others who are adept at leading projects and can serve as internal customers and mentors to other project leads, and still others who are tuned in to team morale. Also, we have on the council both senior members of the engineering team who can leverage their years of experience, and more junior members who are beginning to stretch their skills in leadership roles. This mix allows the senior members to stay technically relevant, and the junior members to dip their toes in the water to see what kinds of

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2 Naturally, when a result is similar to a past year's result, budget estimates may be informed by actual/budget values from the past.

3 Known colloquially around the office as Jedi Council, based on the belief that having a cool name would attract council members. Your definition of "cool" may be different.

leadership roles might appeal to them. We expect that accountabilities of council members, including the holder of the caretaker role, will change over time, which helps keep fresh perspective within the council, and introduces opportunities for many to serve.

Although accountability for holding the council's concerns and meeting the council's results is shared among all council members, individuals on the council will often be responsible for a unique portion of the council's results. We take care to make sure that the focus on individual results doesn't dilute the shared accountability of the council. In particular, anyone on the council must serve as a representative of the concerns of the whole council, to the rest of the organization. This is part of what makes councils advantageous over having individual managers--with a council, there is no single point of failure.

Part of organizing a council involves determining how decisions will be made. Decision accountabilities might be spread amongst team members, or shared by the team. For shared decisions, the council identifies a decision model to use, balancing efficiency of decision making with thoroughness of the process to help ensure the best decisions are made.

Being a council member does not confer a special status with respect to holding information. In particular, we do our best to ensure that council activities are transparent. Transparency here means that all information held by the council is available to others, and is not *a priori* held confidential (although in certain circumstances, such as some personnel issues, confidentiality may be a legal or ethical necessity). To support transparency, we have used a number of council practices, including opening all council meetings to anyone in the organization, keeping meeting notes on a company-wide wiki, and conducting email communications on a mailing list whose contents are archived and available to anyone in the organization. Transparency is facilitated to some extent by the nature of councils--because multiple people are involved in council business, anyone outside the council has several potential sources of information.

Transparency can be tricky. It is not cost effective to make publicly available with full context all the decisions, conversations, etc. that take place in a council. As a result, everyone in the organization must commit to seeking out the context of any partial bits of information about council goings on that might come their way, and council members must commit to providing such context to the best of their abilities when asked. The foundation of transparency is trust in council members to make the best decisions they can based on the information available to them. This trust must be merited by councils committing to transparency.

B. Benefits

Because councils involve a team, all of the costs associated with an effective team are in effect, including start up time for new members, and increased communication costs amongst multiple people. However, in our experience,

the benefits outweigh the costs. We have found the benefits to be:

- The ability to leverage the variety of skills held by many people, rather than relying on finding the one best match.
- Better decision making via multiple points of view.
- The ability to incrementally learn management skills, rather than diving in head first then sinking or swimming.
- Developing generalist knowledge and skills in many people in the organization.
- Council members can keep directly involved with the work while leading the work.
- Multiple points of contact for addressing broad-ranging issues; no single point of failure.

VI. COMPENSATION

For the first years at Galois, salaries were private, and set by the cadre of executives. Discrepancies between the value provided to the company by a Galwegian and their corresponding salary were evident, due sometimes to variations in negotiating skills of entering employees and the tendency in any company to underpay the growing internal talent.

This approach to compensation was obviously at odds with many of our principles and the citizenship manifesto, most especially the principles of transparency and authenticity.

We borrowed wisdom from a variety of sources that showed the real motivators for employees, most of which are not tied to compensation. The goal for Galois was to focus on the deep value-producing aspects of work, which are discovered and pursued through the coaching of stewards. This is obviously not meant to say that compensation is not important, it is just that it is not typically what keeps someone in a job in the long run.

So at Galois, we looked at value in general, and had a key insight that allowed us to rethink the approach to compensation.

A. Compensation and Value

When you go to your mechanic, you pay him for the results of his work. Your car is overheating; you want it to run well. He gives you some justification for the amount of work it will take. Then you decide whether that is of value to you. You wouldn't spend $2000 on a $350 clunker, but you would on your recently purchased $50,000 roadster.

If you are dubious about the cost, you could check out some other shops, to see if that same work is more or less expensive.

If you get it back and it still overheats, you go back to the mechanic and complain that he didn't produce the results you wanted. You may try again with this mechanic, or not. If he has proven trustworthy in the past, you will pay more to have him look further for problems. If he hasn't solved your

problems well before, you might decide to hire a new mechanic.

The mechanic wants to do a good job to earn your future business. You both understand the cost and value of the work to be done now.

Now, why is this model upside down when you look at salaries in the workplace?

It starts with your salary negotiation at hire. Depending on your relative skill and comfort in jockeying for good pay, and perhaps depending on your specific knowledge of the market, you may or may not do a decent job in negotiation. Strange way to start a job, with a test of a skill that may not even be relevant for how you will produce value when you get there. And you are the novice: the company negotiates a lot more salaries and can see the salaries of everyone they employ.

Thereafter, unless you get a promotion, you get rewarded in future work for what you did in the past. You did a fabulous job last year, so you get a raise. (Or maybe not, if the company isn't doing well.) And you reap the benefits of your past good work in the next year.

With the exception of promotions, raises are based mostly on what your prior salary was, so it is an incremental bump over your original negotiated rate. A poor performer that started at a higher salary can continue to work for many years at a better salary, even though the raises are at a much lower percentage rate.

Of course, there are some attempts to rectify such inequities among employees in salary and performance. These are done in non-transparent meetings, such as ranking and rating, where instead of your ability to negotiate for a salary determining your raise, it is your boss's ability to negotiate on your behalf as compared to the rest of the staff. Okay, now that is truly upside down.

And the system works precisely because it is secret.

Often the managers involved in such processes know that there are unfair allocations, but it is not in their best interest, nor the best interest of their staff, to make different decisions across groups.

Galois looked to rethink this entire approach, starting with the principle of transparency, making all salary information public knowledge. This was a terrific incentive to make truly value-based decisions about compensation. All salaries would have to be justifiable, and in most cases, people do know and respect those who are doing a good job. And for those instances where value is not universally understood, good conversations arise that build mutual respect.

B. Paying for the Promise of Future Value

Galois adopted a change in perspective: your salary would be based on the value of the results that you promised to produce in the upcoming period. This matches the way you work with your mechanic. You mutually agree on the value of the work to be done *in advance.*

Just as you wouldn't trust your teenage tinkering next-door neighbor to work on your classic Jaguar, at Galois you don't get to sign up to do just anything, You must convince the person accountable for the overall project that you are able to do the work. This is indeed based on how well you've done in the past, since that performance and credentials are taken into account when the decision is made to trust you with the work for the next year.

But you get paid for the work you are going to do, not the work you did last year. This is very similar to what happens when you get a promotion, but instead of waiting for those infrequent years, you get this every time you sign up for new work.

Galois works hard to characterize the value of different kinds of work, so that we can normalize salaries across different job categories. This is a very unemotional process, since you are not trying to advocate for a person, but rather advocating for the value of a kind of work to be done. Note this is a completely different process than trying to characterize the different performers, and then setting salaries accordingly but limited by what is already being paid.

Then, for each category of work, a salary is set. That is it. If you are doing that work, you make that salary.

As a cautionary note, if you have tried to compare the value of, say, the financial report tracking and the engineering work on a project, you might understand how tricky normalization is. By all accounts, people will have very differing views about relative value based on their perspectives in the business, their experience, and their biases. By making the normalization both transparent and public, there is a chance that this necessarily qualitative assessment has sufficient eyes and endorsement to be adopted.

C. Scenarios

Let's play through some common scenarios that Galois has experienced.

Suppose a Galwegian just really can't get a job done well. Instead of getting a review after a year of sub-par work that just results in a smaller percentage raise for the next year, this Galwegian just doesn't get offers accepted to do that same kind of work the next time.

You are asking: does that mean salary goes down? Yes, it does. But isn't that the true reflection of the value of the work?

Now consider another common situation. An engineer works very well in the current role as technical lead, so is asked to take on a more complex project lead role. Now that Galwegian discovers that they don't like management. In a traditional company, it is extraordinarily difficult to get back to their original role, and the engineer will suffer a bit of ignominy if they did.

But Galwegians get to choose the results they'd like to produce going forward, so they can simply choose to make offers to do what they love instead and take the salary hit. No complicated discussions with human resources or strange looks from former staff.

Same goes if a Galwegian wants to spend more time with kids, or aging parents, or goldfish. Or any other decisions

about the value of their work as compared to the rest of their life. Galwegians get to tailor their offers (and accordingly their salary) to the contribution they want to make.

And the really exciting part of this approach? If you are a star, you will get the chance to sign up for increasingly valuable work, and get the raises you deserve for doing that work, regardless of your tenure with the company.

All this took was courage and commitment to another way of looking at salaries. And the most significant shift was in seeing a salary not as a reflection of the worth of the individual, but as a reflection of the value of the work.

This actually makes the entire process much more humane. There is a modicum of choice for each Galwegian. And there is a lot more equity in the salary setting process.

D. Step by Step
Here is the recipe for what we did.

1. Start from first principles.
We began by identifying our strategy for compensation, which we expressed in a set of principles. Some examples:
- "Compensation is based on value to the organization."
- "Compensation is about caring well for each employee for the long term while accounting for the concerns and requirements of other stakeholders." We recognize that compensation balances employee needs with company, client, and shareholder needs. Pay is not intended to be the source of gaining joy from work, or as a motivator to work harder.
- "Compensation supports team and collaborative work." An implication is that we did not include incentive pay (defined as pay per unit of production) in the strategy as it is based on the premise of individual contribution, creating an environment of competitiveness rather than collaboration.
- "Compensation will be based on these principles, and related standards, and there will be no exceptions to these principles and standards." So, for example, disproportionately high executive salaries relative to the value provided by the executives are out of the question.

Some principles we might have considered, but we decided were incompatible with our approach, included aligning compensation to market value, past performance, or an individual's capabilities.

2. Define standards for compensation.
With our well-defined notion of "result" supported by role definitions, we defined a means to determine the relative value of future results. We came up with five standard dimensions of criteria to evaluate this:
- Level of risk to the company assumed by producing the results.

- Extent of impact to stakeholders, including current/future clients, employees, culture, shareholders, collaborators, technical community.
- Prior experience, credentials, or education required to produce the results. This captures situations where particular prerequisites, such as a PhD or an industry certification, might be a requirement for the result. Note that this isn't about assessing whether the person is capable of doing the work, as that was up to the customer and performer to jointly decide when the results were negotiated.
- Relationships/influence with internal or external people needed to produce the results.
- Level of innovation required.

We also defined a set of salary points. Every employee is paid one of these pre-defined salaries, based on the value to the company of their individual results. The salary points are intentionally few in number, with significant monetary gaps (usually $10K/year or more) between them. Evaluating results is not an exact science, and having a small number (in our case, about a dozen) of salary points allows us to make reasonable judgments about relative value, and keeps us from getting bogged down in discussing fine distinctions. Results at different salary points are notably distinct from one another, and it requires a significant change in one's future set of results to move between salary points.

3. Determine how to measure value of results across the organization
Using the five value dimensions explained above, we established a means to measure the value of an individual employee's set of results. To do so, for each functional area we defined specific value criteria in each of the dimensions. Functional areas include research and engineering, project leadership, business development through relationship building and proposal writing, and operations support including administrative and management roles. These criteria define the *level* of the result.

Result levels make the process more efficient, as it gives us a consistent means for evaluating the value of a result. With a large group of people contributing similar kinds of results, having a way of distinguishing their value in as objective a way as possible is key.

Two difficulties arise once we start comparing results across the company. The first is that our standards about the risk dimension levels may vary a bit. And even more significant, each of us does not necessarily fully understand the value of results in other parts of the organization.

We reconciled these differences by norming the levels-- that is, coming up with a consistent mapping between levels in different role areas across the organization. This required a great deal of discussion, to ensure the mapping was as accurate as possible. A side benefit of this discussion was increased understanding and mutual respect across the organization, as we all learned to appreciate what everyone

brings to the team. Norming is necessarily a partially subjective process, as it requires judgment about the relative value of results in completely different areas of the company.

4. Identify levels of individual's results

Customers and performers have discussions to identify future results. In these conversations, the customer assesses the performer's ability, willingness, and availability to produce their results, and the specific results are defined with that in mind. The specific results are informed by past performance and individual capabilities, but the focus remains on the results, not the performer's capabilities.

5. Map result levels to salary points

Once an individual's set of results and corresponding levels are clear, we need to assess the value of the individual's complete set, and map that value to a salary point. This requires judgment about how relevant a particular result is in contributing to one's overall compensation.

To make the norming process as consistent and standardized as possible, a small team of people well familiar with the process and the variety of results being offered conducts the process. In doing so, they take the greatest care to ensure that focus remains on the results, not on the individual.

6. Revisit frequently

As individual results change, customers across the company re-assess performers' result levels and, when needed, make salary point adjustments. Every Galwegian has the right to petition for a change in salary point level, based on their assessment of the value of their future results. Several times a year customers do a sweep through everyone's promised results to double check for any needed adjustments. Finally, every year the company makes an organization-wide cost of living adjustment to all salary points, subject to current business constraints.

Sometimes an individual may perform results valued at higher than their current result level. This may be an indication that we need to re-examine their results level for future results, but it also can just be that they went "above and beyond" to produce an exceptional result. We recognize exceptional (past) results in this way via a bonus, which can be cash, gift, or other form such as additional time off.

E. The Transition

One hurdle at Galois was in making the transition from a traditional closed compensation scheme. As we initially assessed the value of employees' future results, it was clear that some folks --- who had been skilled salary negotiators --- would need to move down in salary. And surprisingly, sometimes they recognized they had been overpaid! In other cases, there were some frank and challenging discussions about performance. In all cases, the dialogue was productive and future focused.

On an ongoing basis, customers have also needed to have conversations when individuals are no longer able to make future offers at the same level, that is, when they are underperforming on their promised results. With a closed compensation scheme, we could go the more comfortable but organizationally unhealthy route of sweeping this under the rug, but with fully visible compensation, such dysfunctional behavior is unacceptable.

Job market forces sometimes may not reconcile well with a value-based approach to compensation. For example, we might have a need for a rare skill that is highly paid in the job market, but is in fact not hugely valuable to our organization and thus we cannot offer a market-competitive salary. Likewise, we might be tempted to get someone "on the cheap" because the market has a surfeit of qualified performers.

These are healthy dilemmas. For market conditions that require higher salaries where we do not see the value of the results, we should explore why. Is there a different way of accomplishing what we need? Are we minimizing the value of the results when that is not warranted?

For market conditions that are "in our favor," we need to continue to maintain our integrity and pay for results. This is really adopting a different approach for the long term. Payback is in the form of broad trust and commitment among the employees.

A final challenge permeates every aspect of this approach: keeping focused on future results rather than past/current capabilities. This isn't about placing a value on an employee, it's about placing a value on what each of us commits to accomplish.

F. Benefits

At Galois, we have experienced the following benefits, some expected and some not, from our compensation approach:

- Compensation is based on what is most important to the organization rather than arbitrary criteria or circumstances.
- Freedom for a person to adjust their future offers based on their individual circumstances, with no stigma associated.
- High performers become readily visible because their results are explicit, and they can be rewarded commensurately.
- Everyone is motivated to produced well-defined results. This helps make it clear when the scope (and value) of results are increasing or decreasing.
- Customers are engaged in providing effective reviews.

VII. INSPIRATIONS

Creating and evolving the Collaborative Web was influenced by many sources. One of the initial catalysts for change at Galois was Bakke's *Joy at Work* [1], which remains a primary source of influence to this day. Particular aspects of the collaborative web were influenced by [3] and

[8]. Other general sources of inspiration include [5], [6], and [7]. Finally, we were inspired and encouraged by case studies of other businesses with innovative organizational structures such as [2], [4], [9], [10], and [11].

VIII. OBSERVATIONS AND CONCLUSION

A. From Laura

Initially, this work was accompanied by a boatload of skepticism, which is a natural and healthy condition in engineering organizations. In response to the existing culture, I fought the "ask Laura" behavior for the first year or so, where I declined to sign anything or make a decision. I went right back each time and asked "who has this accountability?"

For external relationships, this culture needs interpretation. Since we have no job titles, that means we needed to find a way to explain whom each of us were and what authority we had in terms that the outside world could understand. So Galwegians include whatever title on their business cards that seems useful.

This experiment worked for Galwegians. I believe that it will work anywhere, based on its responsiveness to human nature. However, that is an open question that I hope others may take on.

In summary, the results of the experiment were the consequence of a deep collaboration. Each element was suggested and refined by Galwegians. There were structures that emerged and disappeared over the course of the years of development, as we learned what worked and what didn't. And the culture continues to evolve, responding to the world and to Galwegians as it should.

B. From Jef

Laura left Galois two years ago, and since she was at the heart of developing the practices we describe, it's natural to ask whether it still works. In short: yes, as long as we continue to be committed to communicating "how things work" and remain open to refinement and dispensing with practices that don't or no longer work well.

Learning and coaching are essential, both as we onboard new people, and as Galwegians take on roles new to them. A particular challenge arises from the fact that so many people are in customer roles. While this is beneficial to the organization, it requires that every customer develop skills in holding their performers accountable, providing honest and useful feedback, and making consistent assessments about result levels.

Hiring people who embrace this approach is of course critical, and can at times be challenging, particularly when we're looking for seasoned leaders who may have decades of experience in traditional management structures.

We've been working in this way for seven years now. In that time, revenue and headcount have grown, and we have become significantly more diverse in our client base and research areas. Perhaps most important to our success has been shifting from a technology-driven business to one that is driven by the needs of our clients. Our organizational structure has provided a resilient foundation on which to grow a business.

The concepts and structures endure through changes in leadership and direction, an indication of the sustainability of the approach. The Collaborative Web continues because of the deep satisfaction in our work that it brings to each of us.

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