



cccs

Creative Conditions for Innovation

Paul Pangaro, Ph.D.
Chair of Interaction Design
Graduate Studies Program
College for Creative Studies
Detroit

Technology and Innovation Exchange

BASF

September 18, 2015



cacs

Graduate Studies Program
College for Creative Studies
Detroit



CCS

MFA Transportation Design
MFA Color + Materials Design
MFA Integrated Design
MFA Interaction Design

Graduate Studies Program
College for Creative Studies
Detroit

Faces of CCS MFA





52

- 36 Industrial Design
- 4 Engineering
- 3 Design Studies
- 1 Digital/Visual Media
- 1 Animation Design
- 2 Transportation Design
- 1 Business Administration
- 1 Fine Arts
- 3 Visual Communications

Design by
Xuege Jiang '11

INNOVATION

why is it so elusive?

and what is it, anyway?

what strategies might work?

how should we distribute resources?

how can we lower risk?

how can we increase the likelihood?

ideas

INNOVATION



Harvard Business Review

www.hbr.org

SPOTLIGHT ON THE EFFECTIVE ORGANIZATION

Tensions between your innovation team and core operations can derail your company's growth initiatives. Here's how to end those battles.

Stop the Innovation Wars

by Vijay Govindarajan and Chris Trimble

community₁

A community is a system of people who interact within an agreed set of rules—conventions.

Typically, members of a community share a common location or common interests. They may be related by birth or may come together for social or business reasons. Communities rely on individuals to provide the variety necessary for survival—to share perspective, insight, ideas, and inspiration.

Over time, new members join and existing members depart. These changes can affect the conventions the community keeps.

agrees on & is shaped by

convention₁

Every convention exists within a community.

A convention establishes a relation between a community and its context. It defines a way the community expects its members to behave in a given situation. It prescribes the tools they can use, even what they can think.

Every innovation has a precedent in a previous convention.

maintains relationship to

context₁

(environment)

Every community exists within a context.

Context is the environment in which a community lives. To survive, a community must have a stable relationship with its environment. Maintaining that stable relationship is the purpose of conventions.

can be superseded by

may fail to recognize

pose long-term threats to any

is imbalance in relations among

misfit

each faces

pressure (external) decay (internal)

Entropy always increases. Resisting entropy requires energy and variety. Inevitably, both are limited.

inevitably lead to

change (disturbance)

Pressure from outside or decay inside changes the relationship between a community and its context. That relationship—formalized as a convention—is no longer comfortable, no longer a fit.

A disturbance upsets an existing convention. This is a root cause of innovation.

A disturbance has variety of its own. Unless a community has corresponding variety to cancel it, the variety in a disturbance will overwhelm the community. Variety cancels variety.

disturbs relations creating

misfit (pain)

A misfit arises when a convention no longer maintains a desired relation between a community and its context.

Misfit manifests itself as pain. It exacts a cost—physical, mental, social, or financial—on members of the community.

that is large enough gains

recognition (definition)

Recognition of misfit comes from observation and experience.

creative destruction (unplanned consequences)
Conventions exist in a web of culture. Innovation in one place affects related conventions and may reduce their "fit," necessitating or indirectly affecting the cycle continues, second- or third-order surprising and consequences unintended.
Joseph Schumpeter describes creative destruction as "the process of radical mutation that necessarily reconstitutes the old one, incessantly creating a new one."

increases the likelihood of

if strong, raise calls for efficiency, dangerously reducing

variety (experiences)

W. Ross Ashby describes variety as a measure of information. Variety describes a system's potential to respond to disturbances—the options it has available. Applied to communities, variety describes the experiences—the richness of language and range of cultural tools—they can bring to bear on problems.

In a stable environment, increasing efficiency makes sense. Do what you've been doing, but do it better and at a lower cost. That means narrowing language—decreasing variety.

In an unstable environment, pursuing efficiency may actually be dangerous. You may get better at doing the wrong thing—at doing something that no longer matters.

The key is to make sure what you produce is valuable, before you worry about making it more efficiently. Increasing effectiveness calls for increasing variety—changing perspective, bringing new people, new experience, and new language into the conversation and expanding the field of action.

a model of innovation

Innovation is a holy grail of contemporary society, and especially business. A flood of books and magazines promote it. Design firms promise it. Customers demand it. Survival, we're told, depends on it.

But what is it? And how do we get it?

We used to ask the same questions about quality. Then Walter Shewhart and Edward Deming answered. Today, statistical process control, total quality management (TQM), kaizen, and six-sigma management are fundamental tools in business.

Organizations have become much better at managing quality. Quality has become a commodity, or at least "table stakes," necessary but not sufficient. Now, innovation matters more—because you can't compete on quality alone, whether as a business, a community, or a society. The next arena of global competition is innovation, but the practice of innovation remains stuck some 40 years behind the practice of quality.

Quality is largely about improving efficiency, whereas innovation is largely about improving effectiveness. Improving quality is decreasing defects. It's about measuring. It's making processes more efficient. It works within an existing paradigm.

Business Week design editor Bruce Nussbaum has suggested you can't measure your way to innovation—measurement being the hallmark of quality processes. And though some six-sigma advocates disagree, Nussbaum is pointing out a fundamental difference between managing quality and managing innovation. Innovation is creating a new paradigm. It's not getting better at playing the same game; it's changing the rules and changing the game. Innovation is not working harder; it's working smarter.

This poster proposes a model for innovation. It takes the form of a concept map, a series of terms and links forming propositions.

The model is built on the idea that innovation is about changing paradigms. The model situates innovation between two conventions. Innovation transforms old into new. It is a process—a process in which insight inspires change and creates value.

The process begins when external pressure or internal decay disturbs the relation between a community and its context, a relation maintained by a convention.

The existing convention no longer "fits." Perhaps the context changed. Or the community. Or even the convention. Someone notices the misfit. It causes stress. It creates enough friction, enough pain, to jump into people's consciousness. Perception of misfit almost simultaneously gives rise to proposals for change, for reframing. These proposals compete for attention. Most fail to inspire, are ignored, and fade away.

The changes that survive are by definition those a community finds effective. They spread because they increase fit (gain) and lower pain or cost (delivering value).

We rarely recognize innovation while it's happening. Instead, innovation is often a label applied after the fact, when its value is clear and a new convention has become established.

Ethnography and other research techniques may help identify opportunities for innovation. Design methods may increase the speed of generating and testing new ideas. But new ideas are still subject to natural selection (or natural destruction) in the political process or the marketplace.

Innovation remains messy. Even dangerous. Luck and chance, being at the right place at the right time, still play a role. But heightened sensitivity and persistent alertness may increase luck.

This model is not a recipe. At best it suggests ways to increase the probability of innovation. Our goal is for it to spur discussion. Our hope is that increased understanding will spur innovation and increase the greater good.

innovation

innovation

Each innovation is a link between two conventions: the one it replaces and the one it becomes. An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

An innovation is a pivot; it transforms one period into the next.

(a bit of luck)

preparation

(immersion)

Some organizations have processes by which their members build (or buy) new ideas at a small scale. The organizations vet (or select or destroy) ideas, moving a few to the next stage. They "incubate" new ideas in "hothouses" long enough to launch them into the world. Examples include (perhaps most notably) Royal Dutch Shell, some religions (such as Catholicism), venture capital firms, and technology companies such as Google.

Some communities (some ecologies) seem to have the variety and structures needed to raise the probability of innovation (within certain domains). For example, Silicon Valley, Route 128 around Boston, Austin, Research Triangle, and Seattle all currently enjoy this advantage.

as it diffuses becomes

community₂

Of course, the convention resulting from a successful innovation differs from the convention that preceded it. Likewise, the community that exists after an innovation is likely to have changed

evaluates

insight (seeing opportunity)

Insight begins a process of restoring fit. Insight remains the most mysterious part of the innovation process. It may be irreducible, but it can be aided. Immersion within the context is almost always essential. Experience with other domains helps (by increasing variety). For example, applying patterns from other domains can help solve new problems. This is the promise of Genrich Altshuller's system known as TRIZ.

Insight is a type of hypothesis, a form of abduction. Insight may come from juxtaposition and pattern matching.

György Polyva suggests asking:
What is the unknown?
What are the data?
What is the condition? (What are the constraints?)
What is the connection between data and unknown?
What is a related problem?
How could you restate the problem?
What could you draw to represent the problem?

articulation (prototyping)

For insight to matter, it must be articulated—given form.

It might be a Hypothesis Model or diagram Outline Script or story Sketch Mock-up Prototype Pilot

demonstration (testing)

No innovation arises fully formed.

Articulation provides a means of sharing an insight.

frames possibilities for

must be shared through

must be proved through

rec

recognition (definition)

Recognition of misfit comes from observation and experience. Research methods—such as ethnography—help.

But identifying a problem requires definition. Definitions are constructed—agreed to. They have constituencies. Thus, definition is a political act, an exercise of power.

learning process (refining goals)

Testing a prototype may raise questions about the framing of a problem or definition of goals. Reframing or refining opens the possibility to trying other approaches.

design process (artificial evolution)

Neural deconstruction (i.e., discarding poorly performing variables) is the second mechanism of evolution—and design.

simple iteration (trial & error)

Creating variation is the first mechanism of evolution—and design.

helps improve

that fails may lead to new

may prompt a new

calls for increasing variety—changing perspective, bringing new people, new experience, and new language into the conversation and expanding the field of action.

comes from

may create a multiplier effect leading to more

possess

motivates

benefit from (increase efficiency by) sharing skills within a

Individuals who are prepared to innovate possess:

Optimism
Belief they can improve the world
Openness to change
Confidence to make it so
Tenacity, persistence to see it through
Passion, desire, even obsession

Variety
Experience, skill, and talent
Domain expertise
Knowledge of other domains
Understanding of the process
Methods and techniques
Management, rhetorical, and political skills
Practice (Doing it a few times helps.)

They also know what is not known but necessary for progress; they understand how to find it; and they recognize who can provide that knowledge.

commu

commu

community₂

agrees on & is shaped by

convention₂

maintains relationship to

context₂

as it diffuses becomes

evaluates

preserves status quo by resisting

creates new

is balance in relations among

must be proved through

reduces risk, encouraging

reforms relations creating

fit (gain)

articulation (prototyping)

For insight to matter, it must be articulated—given form.

- It might be a Hypothesis
- Model or diagram
- Outline
- Script or story
- Sketch
- Mock-up
- Prototype
- Pilot

simple iteration (trial & error)
Creating variation is the first mechanism of evolution—and design

helps improve

that fails may lead to new

may prompt a new

may create a multiplier effect leading

demonstration (testing)

No innovation arises fully formed.

Articulation provides a means of sharing an insight. Demonstration proves (or disproves) the insight's value. Demonstration provides a basis for adoption; it is a key to creating change.

Demonstration enables evaluation. Testing discloses errors, increases understanding, and provides a basis for improvement.

Iteration is always necessary.

adoption (counter-change)

The scale of change varies. Many people have proposed models, for example:

- Michael Geoghegan:
 - Recognizing a new domain of invention
 - Creating new opportunities for discovery within the domain
 - Improving the efficiency with which the discoveries are applied

- Horst Rittel:
 - Simple problems, where the goal is defined
 - Complex problems, where the goal remains unclear
 - Wicked problems, where constituents cannot agree on the goal

- Parrish Hanna:
 - Tactical or incremental
 - Strategic or punctuated
 - Cultural or process-oriented

is a measure of propensity for

beliefs

may lead to

actions

may lead to

artifacts

all deliver

value

is reflected as increased

for progress; they understand how to find it, and they recognize who can provide that knowledge.

community

Dubberly Design Office prepared this concept map as a project of the Institute for the Creative Process at the Alberta College of Art and Design. The Institute exists to focus and organize activities, enterprises, and initiatives of ACAD with regard to the cultivation of dialogue, research, and special projects that directly address the nature of the creative process and design thinking. ACAD is a leading centre for education and research, and a catalyst for creative inquiry and cultural development.

Please send comments about this model to icp@acad.ca

Acknowledgements

Writing and design by Hugh Dubberly, Nathan Felde, and Paul Pangaro
Additional design by Sean Durham and Ryan Reposar
Research by Satoko Kakihara, ACAD faculty Chris Frey, Wayne Giles, and Darlene Lee

Copyright © 2007

Dubberly Design Office
2501 Harrison Street, #7
San Francisco, CA 94110
415 648 9793

Institute for the Creative Process
at the Alberta College of Art + Design
1407-14 Ave NW
Calgary, AB Canada
T2N 4R3
403 284 7670



Sponsorship

EPCOR, a founding partner of the Institute for the Creative Process, generously provided funding for this project.



Printed in Canada

**NOTES
ON THE ROLE
OF LEADERSHIP
& LANGUAGE
IN REGENERATING
ORGANIZATIONS ◀**

Your organization is a living system of conversations.

Like any organization,
your organization is a set of conversations
among people.

Like any organization,
your organization needs to change
to meet the needs of a changing market.

Your organization seeks to build on previous successes—
but these successes
emerged from internal conversations
that may no longer be as productive
as they once were.

For your organization to evolve effectively,
it must understand the ways
its customers, developers, and competitors
are evolving.

It can understand this evolution

Your organization is a living system of conversations.

Like any organization,
your organization is a set of conversations
among people.

Like any organization,
your organization needs to change
to meet the needs of a changing market.

Your organization seeks to build on previous successes—
but these successes
emerged from internal conversations
that may no longer be as productive
as they once were.

For your organization to evolve effectively,
it must understand the ways
its customers, developers, and competitors
are evolving.

It can understand this evolution

ON LANGUAGE

An organization is its **language**.

Ultimately,
an organization consists of conversations:
who talks to whom, about what.

Each conversation
is recognized, selected, and amplified
(or ignored) by the system.
Decisions, actions, and a sense of valid purpose
grow out of these conversations.

Conversation leads to agreement.
Agreement leads to transaction.

Therefore, an organization's language
is critically important.
It becomes
more than simply a means for communication.
It becomes
a field for action, and a way of constructing truth.

Narrowing **language** increases efficiency.

Organizations create their own internal language to solve specific problems.

This language serves as a kind of shorthand: Managers use it every day, knowing they will be clearly understood.

This internal language is designed to address the needs of the present-day business. It helps the organization's managers answer familiar questions and thus increases efficiencies.

Over time, this internal language grows increasingly specialized—and narrow.

Narrowing **language** increases efficiency.

Organizations create their own internal language to solve specific problems.

This language serves as a kind of shorthand: Managers use it every day, knowing they will be clearly understood.

This internal language is designed to address the needs of the present-day business. It helps the organization's managers answer familiar questions and thus increases efficiencies.

Over time, this internal language grows increasingly specialized—and narrow.

Narrowing **language** also increases ignorance.

The organization's internal language is designed to help managers facilitate present-day business—not look beyond it.

Using the internal language, managers increase efficiencies, but cannot recognize new fields of research, new discoveries, new approaches.

Like all of us, they cannot recognize their own limitations. Constrained by the previously successful language, we do not know that we do not know. Consequently, we think we know—and thus cannot learn.

Developed as a tool to increase efficiencies, the organization's language, paradoxically, becomes a trap.

Expanding **language** increases opportunity.

The conversations necessary
for creating fundamental change
do not come naturally.

They pose questions that cannot be understood
in the organization's present language.

The conversations necessary
for generating new opportunities
come from outside the system.

Their language has a different history.
It is often technically and intellectually demanding.
Consequently, it is often dismissed.

For an organization to survive,
it must be able to acquire
new, relevant language domains.

Expanding **language** increases opportunity.

The conversations necessary
for creating fundamental change
do not come naturally.

They pose questions that cannot be understood
in the organization's present language.

The conversations necessary
for generating new opportunities
come from outside the system.
Their language has a different history.
It is often technically and intellectually demanding.
Consequently, it is often dismissed.

For an organization to survive,
it must be able to acquire
new, relevant language domains.

To regenerate, an organization creates a new **language**.

To support an organization's future viability,
effective decision makers actively introduce change
into the system.

They do so by generating new language
that appropriate groups in the organization
come to understand and embrace.

This new language does not overtly challenge
the pre-existing, efficient system,
but rather creates new distinctions
and supportive relationships.

In this way, decision makers act as interlocutors
and incubators of systemic change.

Your organization must create new language.

Like any organization,
your organization has its own internal language.
Like any language, it is a field for action,
a way of constructing truth,
a basis for transaction and business.

To regenerate itself,
your organization must first recognize the limitations
inherent in its current language.
Then it must seek out new language domains,
and translate them into conversations
that the organization may understand and embrace.

When initiated by management,
this process is highly specific.
It requires a deliberate, organized, dedicated search
for new classes of input
into the organization's language.

Your organization must create new language.

Like any organization,
your organization has its own internal language.
Like any language, it is a field for action,
a way of constructing truth,
a basis for transaction and business.

To regenerate itself,
your organization must first recognize the limitations
inherent in its current language.
Then it must seek out new language domains,
and translate them into conversations
that the organization may understand and embrace.

When initiated by management,
this process is highly specific.
It requires a deliberate, organized, dedicated search
for new classes of input
into the organization's language.

ON LEADERSHIP

Leadership is a condition of an organization.

Leadership is not a property of a person.
Leadership has little to do with personality type.

Leadership is the reduction of uncertainty
in an organization.
It comes from clear messages,
which lead to focused actions
that cannot easily be misinterpreted.
It comes from developing channels
for continuous feedback.

All these characteristics reduce cost and stress
to the individual working in the organization.

Leadership is the reduction of uncertainty.

When clarity and validity of purpose exist within the organization, the feeling of ambiguity decreases. Stress and cost to the system are lowered. Uncertainty is reduced.

Those working in the system perceive an expansion of personal potential and increased security. As they become aware of opportunities for growth, they participate more openly in the system. Feedback increases.

Leaders reduce uncertainty, give clear and meaningful messages, and provide opportunities to act in ways that cannot easily be misinterpreted.

Leadership is the reduction of uncertainty.

When clarity and validity of purpose exist within the organization, the feeling of ambiguity decreases. Stress and cost to the system are lowered. Uncertainty is reduced.

Those working in the system perceive an expansion of personal potential and increased security. As they become aware of opportunities for growth, they participate more openly in the system. Feedback increases.

Leaders reduce uncertainty, give clear and meaningful messages, and provide opportunities to act in ways that cannot easily be misinterpreted.

Past language limits future vision.

Managers understand the organization's past behavior. But this knowledge, and the language that accompanies it, limit their vision of the organization's potential future state.

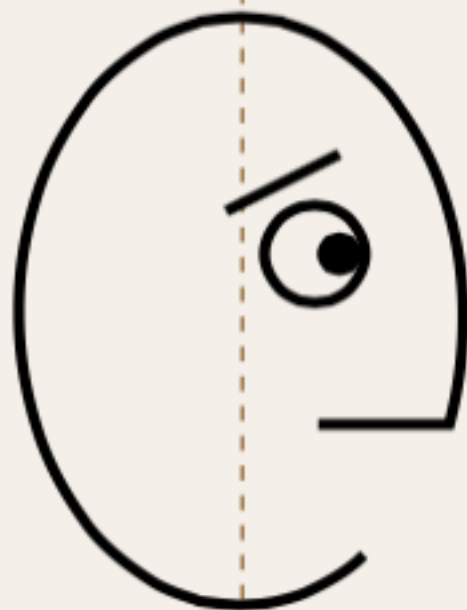
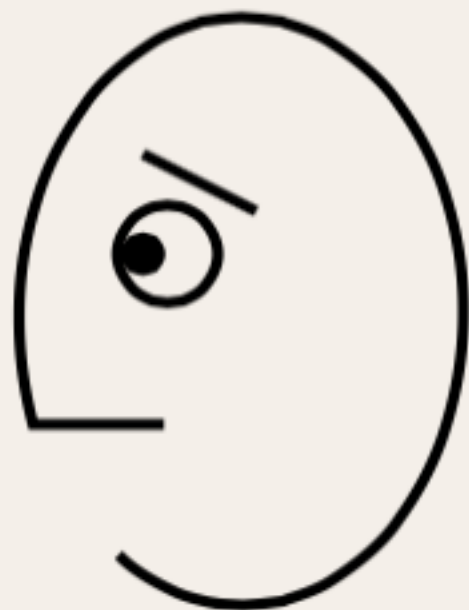
Using the language of the past, managers may try to provide a vision for the future. But it is an old future—a memory of what the future could be.

Managers may strive for fundamental change, but their language prevents them from achieving it.

Manager

Entrepreneur

Seeks
efficiency



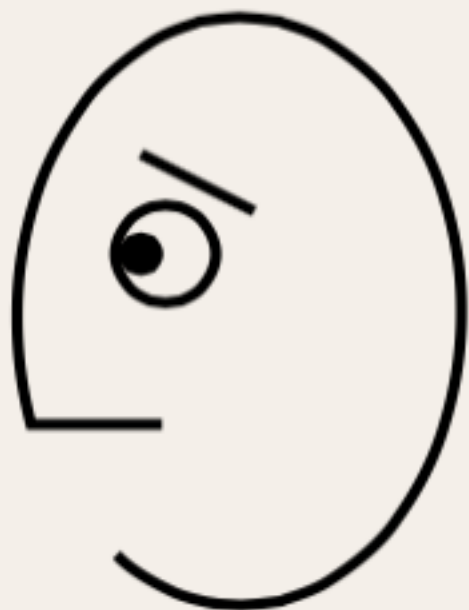
Seeks
opportunity

Inside
(within the organization)

Outside
(in the environment)

Manager

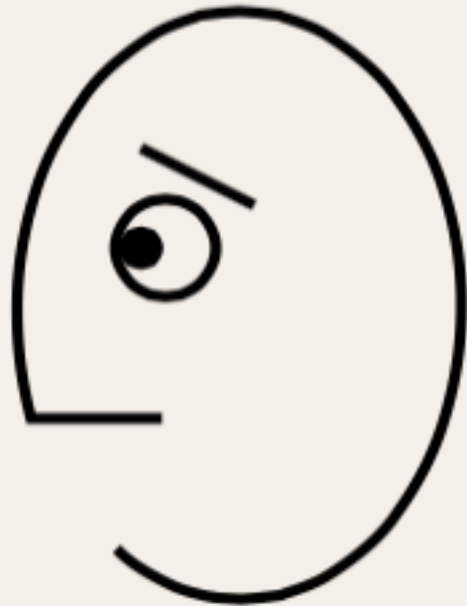
Seeks
efficiency



Inside
(within the organization)

Manager

Seeks
efficiency



Inside
(within the organization)

Managers' reaction to
Entrepreneurs' language:

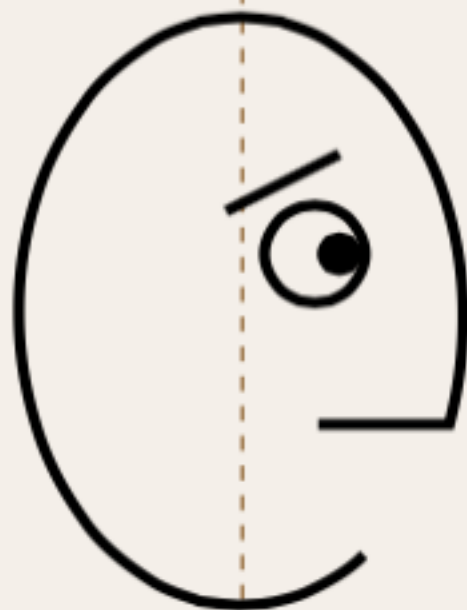
“Don't distract me with
future problems.”

“That's a waste of time.”

“Stop taking resources away
from what's important.”

Outside
(in the environment)

Entrepreneur



Seeks
opportunity

Outside
(in the environment)

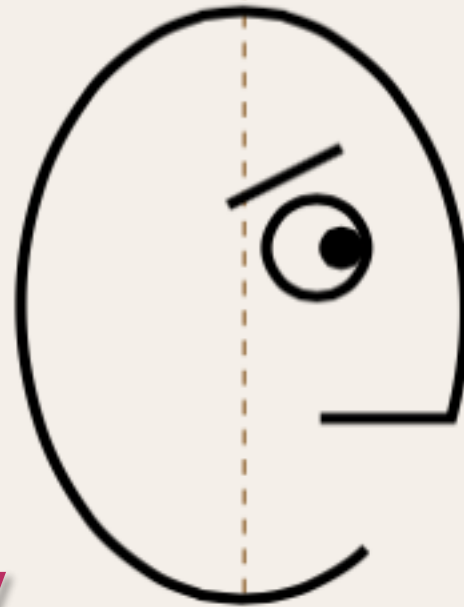
Entrepreneurs' reaction to Managers' language:

“You are stuck in the past.”

“What you want to do is no longer relevant.”

“Stop taking resources away from what's important.”

Entrepreneur



Seeks opportunity

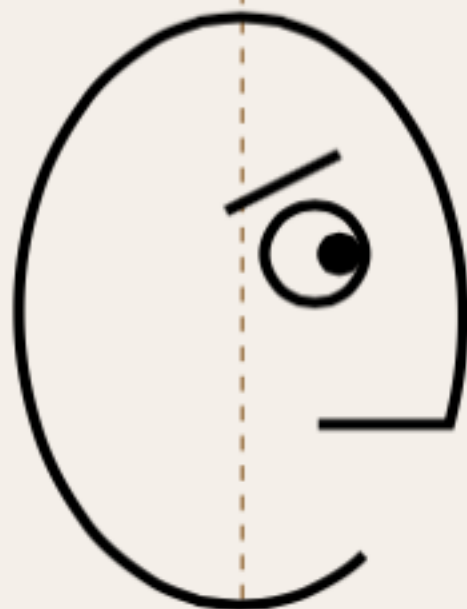
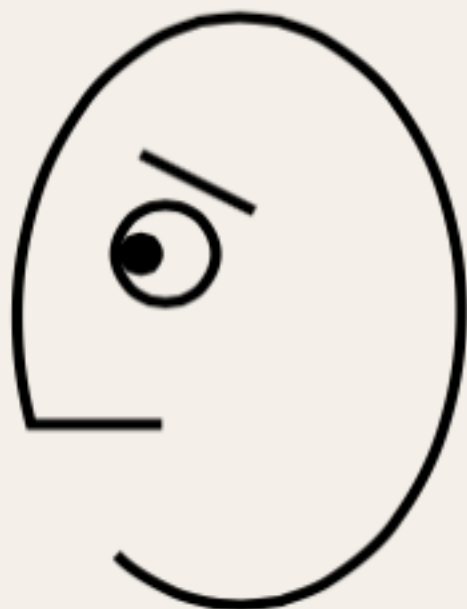
Outside
(in the environment)

Inside
(within the organization)

Manager

Entrepreneur

Seeks
efficiency



Seeks
opportunity

Inside
(within the organization)

Outside
(in the environment)

Your organization needs different languages to discuss its present and future business.

Like all organizations,
your organization must recognize
two businesses: present and future.

Some within your organization
are tasked with improving performance
of the present-day business.
They use the current language
to increase efficiencies.

Others are tasked with generating opportunities
for your organization's future business.
They recognize new domains of invention
and translate them into new language
that may lead to profitable new endeavors.

For your organization to learn and grow,
both kinds of people are necessary.

Your organization needs different languages to discuss its present and future business.

Like all organizations, your organization must recognize two businesses: present and future.

Some within your organization are tasked with improving performance of the present-day business. They use the current language to increase efficiencies.

Others are tasked with generating opportunities for your organization's future business. They recognize new domains of invention and translate them into new language that may lead to profitable new endeavors.

For your organization to learn and grow, both kinds of people are necessary.

Creating “New Language” is the single most important means to innovation that will be:

- transformational
- disruptive
- a generator of value in today's and tomorrow's markets.

Creativity =
Recognizing invention.
Profiting from discoveries.
Developing efficiencies.

Successful organizations
support at least three orders of creativity.

They provide resources to recognize invention,
which opens up new domains of language.
In these new domains,
profitable discoveries may be made.

They provide the necessary conditions
for discovering and marketing
products and services
that emerge from these new domains.

Then, they develop more cost-effective ways
of producing and delivering
these new products and services.

Your organization needs different languages to discuss its present and future business.

Like all organizations, your organization must recognize two businesses: present and future.

Some within your organization are tasked with improving performance of the present-day business. They use the current language to increase efficiencies.

Others are tasked with generating opportunities for your organization's future business. They recognize new domains of invention and translate them into new language that may lead to profitable new endeavors.

For your organization to learn and grow, both kinds of people are necessary.

Creating “New Language” is the single most important means to innovation that will be:

- transformational
- disruptive
- a generator of value in today's and tomorrow's markets.

New Language can be aided by:

- isolating conversations for future business from today's business
- resourcing productive, evolving conversations — not all conversations
- designing “focusing problems”.

Creativity =
Recognizing invention.
Profiting from discoveries.
Developing efficiencies.

Successful organizations
support at least three orders of creativity.

They provide resources to recognize invention,
which opens up new domains of language.
In these new domains,
profitable discoveries may be made.

They provide the necessary conditions
for discovering and marketing
products and services
that emerge from these new domains.

Then, they develop more cost-effective ways
of producing and delivering
these new products and services.

Creativity =
Recognizing invention.
Profiting from discoveries.
Developing efficiencies.

Successful organizations
support at least three orders of creativity.

They provide resources to recognize invention,
which opens up new domains of language.
In these new domains,
profitable discoveries may be made.

They provide the necessary conditions
for discovering and marketing
products and services
that emerge from these new domains.

Then, they develop more cost-effective ways
of producing and delivering
these new products and services.

“Focusing Problems”:

- must be consistent with our DNA
- have access to new domains of expertise, beyond the current organization
- engage an initial set of willing individuals
- must teach the business as a whole
- have economic potential
 - must lower uncertainty (risk) in a market, or
 - must lower the effort for a person to reach a goal
- participate in the “new economy” by creating value from networks of information flow rather than materials and products.

INNOVATION

why is it so elusive?

and what is it, anyway?

what strategies might work?

how should we distribute resources?

how can we lower risk?

how can we increase the likelihood?

Creative Conditions for Innovation

- protect tomorrow's business from today's business
- create new language for tomorrow's business
 - separately resource creation of new language
 - design a focusing problem
 - seed team from those who are most eager & capable
 - bring necessary expertise to the team, from outside if necessary.



cccs

Thank you.

ppangaro@collegeforcreativestudies.edu
pangaro.com/innovation

Technology and Innovation Exchange

BASF

September 18, 2015

