

The Challenge of Craft

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What you are about to hear is
deliberately provocative.

My intent is to challenge and
question, not to insult or anger.

If you are moved to think, and to discuss,
among yourselves (or with me), what you
hear, then this hour will be a success.

First -- an exercise.

There were three colored cards and a pen or pencil on the seat when you came in.

On the red card,
define, in 1-2 sentences

Software Craftsmanship

On the orange card,
define, in 1-2 sentences

Craftsman

On the yellow card, define, in one sentence each:
Novice -- Apprentice -- Journeyman -- Master



As far as I know, this book - Software Craftsmanship: The New Imperative, by Pete McBreen, in 2001 - was the first book written about software craftsmanship.

Nowhere is Software Craftsmanship defined!

**SC is people
centric.**

SC is a Metaphor.

SC is a moral imperative.

SC is analogous to medieval craft guilds.

SC is 'practice' learned and maintained only by doing.

Raising the bar.

As aspiring Software Craftsmen we are raising the bar of professional software development by practicing it and helping others learn the craft. Through this work we have come to value:

Not only working software, but also well-crafted software

Not only responding to change, but also steadily adding value

Not only individuals and interactions, but also a community of professionals

Not only customer collaboration, but also productive partnerships

That is, in pursuit of the items on the left we have found the items on the right to be indispensable.

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More confusion - still no definition!

When all else fails - try Wikipedia

There is a definition: Software craftsmanship is an approach to software development that emphasizes the coding skills of the software developers themselves.

The metaphor is there as well

a metaphor between modern software development and the apprenticeship model of medieval Europe.

The Experts Say

(red cards)

Craftsman defined, sort of ...

“good” hacker - able to make the computer do something useful

“... who can take a complete job from start to finish” ... “from initial discussions to maintaining the released application.”

The Experts Say

(orange cards)

“The process of becoming a software craftsman is not easy ... requires dedication and time ...is a mindset and an attitude, rather than a body of knowledge ... requires an in-depth understanding of the craft, but understanding and knowledge are insufficient ... the key ... the personal commitment to mastery and taking the responsibility for your own work.

Schooling is insufficient and ineffective

Apprenticeship is much more effective than schooling

Journeyman are the Key - disseminate ideas from master, guide apprentice, cross-fertilize among masters, achieve mastery

‘Guild’ - community?

The Experts Say

(yellow cards)

Three Challenges of Craft

One: define the craft - what are you crafting?

Two: define the role - what must you know and what must you be able to do before you can fill that role?

Three: define the journey - what, where, how, and when you acquire the knowledge, skills, and understanding?

Define the Craft

Good News:

There is a craft, an applied art, and it is desperately needed.

Define the Craft

Good News:

There is a craft, an applied art, and it is desperately needed.

Bad News:

it has almost nothing to do with programming!

Those that program the ubiquitous computing devices that comprise today's world are - quite literally - creating and defining the reality in which everyone must live, work, play, think, and feel.

The Craft is Reality Construction!

Reality is a Complex Adaptive System (CAS) that we modify by adding, deleting, or modifying either an element of that system or a relationship among elements in that system - sometimes by automating, and therefore programming, that change.

The discrete change, and therefore the programming required to affect that change is trivial.

The Craft is the understanding of the CAS and the knowledge and experience required to make the right change at the right time in the right place to assure that the CAS is in a “better” state than it was before.

Define the Role (metaphorically)

doctor

designer

architect

synthesist

ecologist

polymath

Qualifications

"The ideal architect should be a man of letters, a skillful draftsman, a mathematician, familiar with historical studies, a diligent student of philosophy, acquainted with music; not ignorant of medicine, learned in the responses of jurisconsults, familiar with astronomy, and astronomical calculations."

Vitruvius 25 B.C.

Modern Polymath Curriculum

Design

design thinking
complex systems design
enterprise design
visualization
interaction / experience design

Testing

automated / regression testing
formal testing
aformal testing

Teamwork

team dynamics
team leadership
team formation
high performance teams
team diagnostics
team communications

Philosophy

metaphysics
epistemology
hermeneutics
philosophy of science
philosophy of technology
philosophy of business

Math

geometry
functions
algorithm patterns
probability / statistics
graphs / networks
patterns of math solutions

Communication

reading for pleasure
reading for purpose
writing for pleasure
writing for purpose
oral presentation
story telling
visual communication
modeling
mentoring
teaching

Systems

general systems theory
ultra-large scale / complex systems
systems decomposition
systems modeling

Art / Health

drafting and drawing
design
creativity - creative expression
music theory and performance
yoga / tai chi
fitness / health

Thinking

design thinking
scientific thinking
metaphoric thinking
analytic thinking
zen mind / enlightenment
intro/retro-spection
perception and illusion

Data

data representation
stories / metaphors
knowledge
persistence
search
encryption
information science
indexing
metadata

Social Science

cultural anthropology
ethnography
historiography
history of science
history of technology
seeding / fostering culture

Method / Tools

development support (IDE)
frameworks / APIs
modeling tools
communication tools
CSCW tools and environments
method - formal / aformal
tool administration

Programming

language families
Syntax and libraries
Idiom and Standards
program architectural patterns
system architectural patterns
networks and webs
mobility and ubiquitous contexts
interfaces and ambient computing
game design
operating systems
security

Business

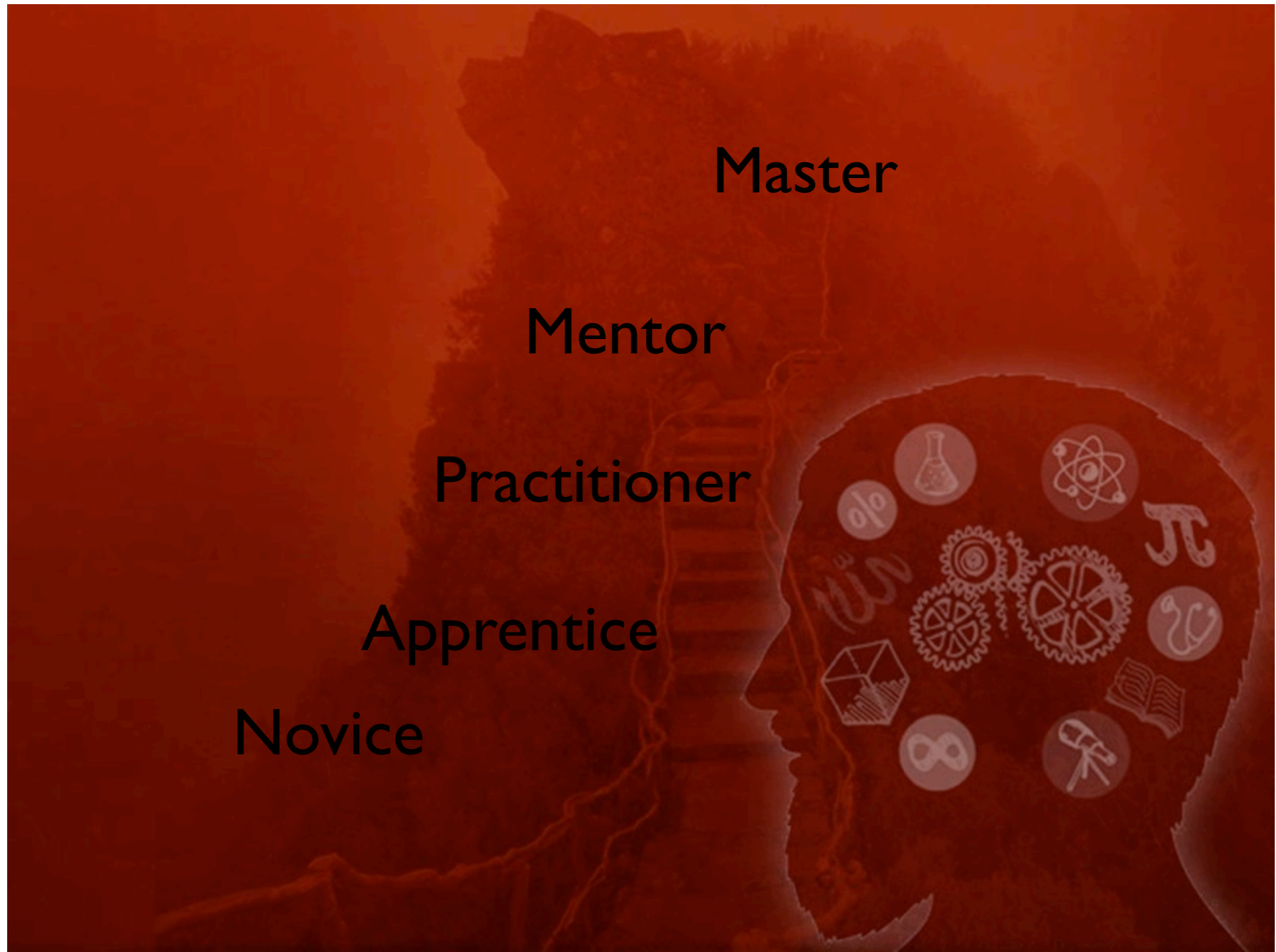
strategy and management
business models
business analytics
organizational structure / culture
entrepreneurship / innovation

Science

scientific method
feyerabend, et. al.
physics theory
cartography (GIS)
biology (agents and cells)
quantum philosophy
ecology
evolution

Each category has 5-20 subjects,
each subject has 5-10 topics,
each topic 5-10 discrete competencies,
each competency has seven levels of proficiency

Define the Path



The Studio

Imagine...

...a studio in Renaissance Florence; a master and advanced apprentices at least; several arts being worked shoulder to shoulder: sculpture, painting, goldsmithing, even poetry with masters for each; a spectrum of younger apprentices eager to master one of them but eager also to learn another, or two. This the ideal of the bottega:

- a “storefront” where goods and services are produced and delivered to paying customers
- a workshop simultaneously engaged in the craft, in building the tools and discovering the techniques that advance and support the craft, and teaching that craft to apprentices
- a place noisy with multiple projects and activities; walls and benches covered with works in progress and exemplars of the craft
- a place filled with the tools of the craft (add computers and digital displays to the easels, brushes, hammers, chisels, carving, forges, kilns, model making, etc. tools found in a typical bottega); with room for lounging and eating facilities as well
- an intellectual center that was a “must visit” for masters, scientists, and thinkers visiting the area, overseen (deliberately avoiding the term managed) by local masters and journeymen
- an environment and atmosphere that is very self-consciously multi- and inter-disciplinary; that mixes theory and practice almost without differentiation
- a place full of music, especially “after hours”
- a place to share food and drink (and perhaps sleep)
- a fountain of innovation and creativity

The Challenge of Craft

Commitment

driven by an inner moral imperative, (a calling),
and the conviction you CAN make the world a
better place for humanity.