



CS 428
THE MYTHICAL MAN-
MONTH
Chapters 4, 5, 7, 11, 14

WINTER 2023

BRUCE F. WEBSTER

Ch 4: Aristocracy, democracy, and system design

- ▶ Brooks: conceptual integrity is *the* most important consideration in system design (I agree)
- ▶ Simplicity, straightforwardness, unity of design are necessary
- ▶ The design must proceed from one mind or a very small number of agreeing resonant minds
- ▶ The conceptual integrity of a system determines its ease of use
- ▶ A consistent architecture enhances the creative style of implementers
- ▶ A well-thought-out architecture increases the robustness and adaptability of the resulting software system

Ch 5: The Second-System Effect

- ▶ Interactive discipline for the architect
 - ▶ The architecture is valuable input into estimating the implementation and testing
 - ▶ If the schedule is unacceptably long, the architect can look for ways to simplify
 - ▶ Big challenge: features that may seem simple to the customer may actually be very difficult to design and implement
- ▶ The second-system effect
 - ▶ Brooks notes later that true iterative development can diminish this problem, but...
 - ▶ The first shipping version usually has many deferred features; there is a strong temptation to throw in “everything but the kitchen sink” into version 1.1 or 2.0
- ▶ Real-world issue: incurring ‘technical debt’ and not handling it

Ch 7: Why Did the Tower of Babel Fail?

- ▶ What they did have:
 - ▶ A clear mission
 - ▶ Manpower
 - ▶ Materials
 - ▶ Time
 - ▶ Technology
- ▶ What they lacked:
 - ▶ Communication
 - ▶ And, as a consequence, organization
- ▶ Your observations/experience?

Ch 7: continued

- ▶ Project workbook: replaced today by online organization (e.g., github, your project wiki, etc.)
- ▶ Communication challenge: with n workers on a project, there are $(n^2-n)/2$ possible interfaces and 2^n possible sets of workers
- ▶ Solution: Division of labor / specialization of function
- ▶ Key: project manager and chief architect need to be different people
 - ▶ Their priorities conflict
 - ▶ Chief architect will tend to be overly optimistic

Ch 11: Plan to throw one away

- ▶ As with “second system effect”, Brooks feels his comments here are superseded by use of iterative/incremental software development
- ▶ Still, far too often, “pilot” or “prototype” systems are forced to evolve into production systems
- ▶ Only after your first cut do you often see how you should have done it in the first place
- ▶ What has been your observation/experience?

Ch 11: Continued

- ▶ Plan the organization for change
 - ▶ Still a very real issue: lack of technical advancement track in most organizations
 - ▶ Instead, developers are pushed into management if they want to be promoted
- ▶ Two steps forward and one step back
 - ▶ Most 'maintenance' work involved adding new features
 - ▶ Introduces software entropy (or, if you prefer, software rot)
 - ▶ Production systems that are modified become less stable/reliable over time
 - ▶ "Less effort is spent on fixing original design flaws; more is spent on fixing flaws introduced by earlier fixes"
- ▶ Your observations/experience?

Chapter 14: Hatching a Catastrophe

- ▶ “How does a project get to be a year late? One day at a time.”
- ▶ Milestones must be concrete, specific, measurable events
 - ▶ The myth of the “Oh, we’re about XX% done” statement
 - ▶ 90/90 rule: 90% of the project takes the first 90% of the schedule; the remaining 10% of the project takes the other 90% of the schedule.
- ▶ The “three weeks before deadline” rule:
 - ▶ “*Underestimates* [of project schedule] do not change significantly during the activity until about three weeks before the scheduled completion.”
- ▶ Need for a critical-path schedule (e.g., PERT) to show the critical path
- ▶ Observations?

CH 14: Continued

- ▶ Not being willing to pass bad news uphill
 - ▶ Webster: [The Thermocline of Truth](#) (2008) [Webster #2]
- ▶ Not knowing the news is bad
 - ▶ Webster: [Lies, Damned Lines, and Metrics](#) (parts I through III) (2008) [Webster #3]
 - ▶ Project progress metrics need to be objective, repeatable, and informative
 - ▶ Weinberg's Law of Metrics: That which gets measured gets fudged.
 - ▶ The Metric Law of Least Resistance: "The more human effort required to calculate a metric, the less often (and less accurately) it will be calculated, until it is abandoned or ignored altogether."
- ▶ Thoughts and observations?

Assignments for next class (01/30)

10

- ▶ By midnight this Saturday (01/28)
 - ▶ Finalize team membership and refine project definition and scope; update your team's Wiki page appropriately; start talking about scope and roles
 - ▶ Listen to your first podcast (any one of your choosing) and complete the exam on Learning Suite
 - ▶ Start actual work on your projects (first prototype demo in 6 weeks)
- ▶ By start of class next week (01/30)
 - ▶ Read *The Mythical Man-Month* chapters 16-19 and complete the exam in Learning Suite
 - ▶ Read Webster #1 readings (online at class website under 'Readings and Podcasts') and complete the exam on Learning Suite