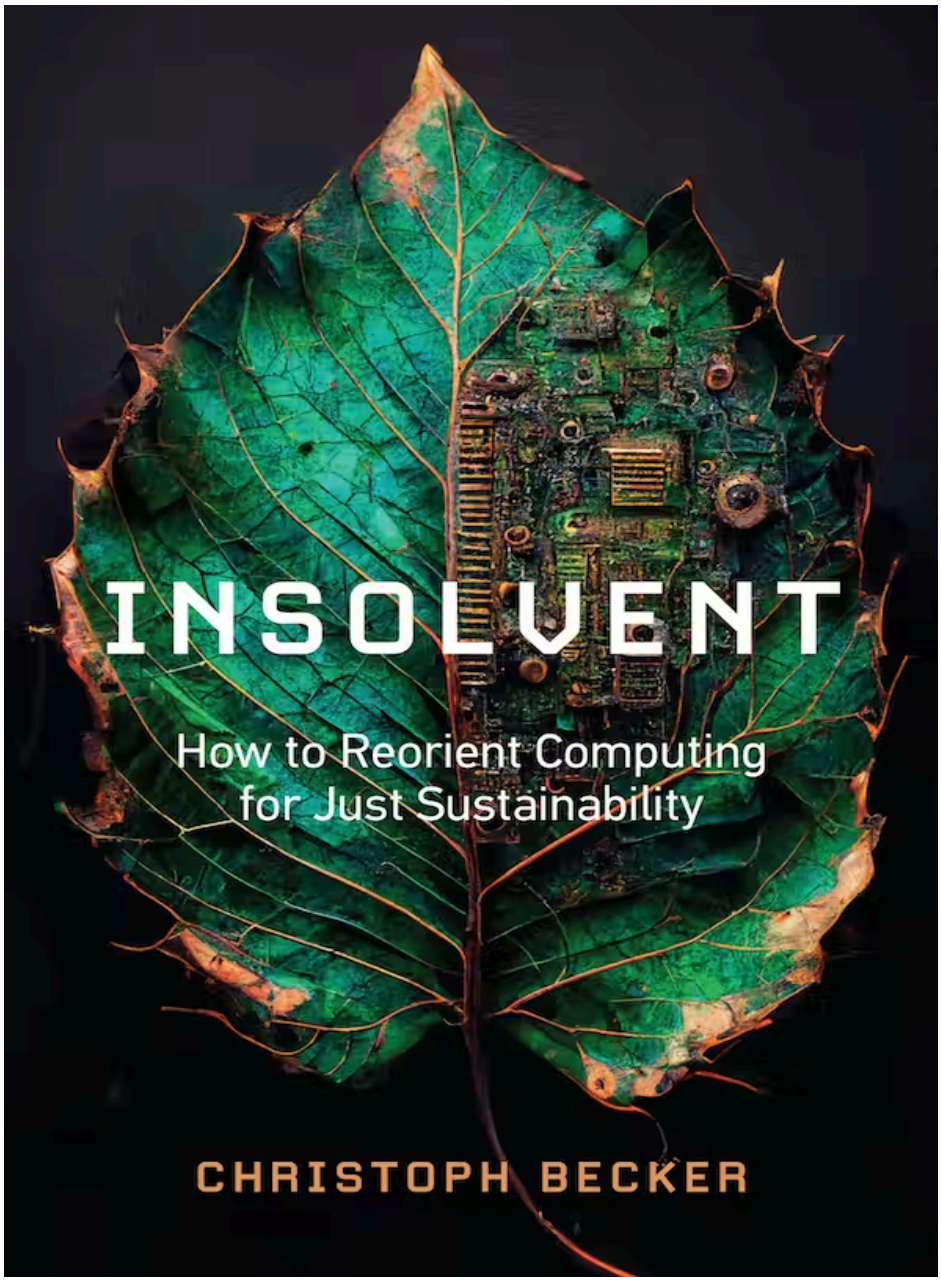

Insolvent: How to Reorient Computing for Just Sustainability

Reading and Discussion Guide

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Overview

This document is a reading and discussion guide for Insolvent, available Open Access here.

This reading and discussion guide will continue to evolve. All corrections, comments and recommendations are appreciated and welcomed. **Please add your comments!** 🙏

The document contains three parts:

1. Discussion questions per chapter (These are still drafts - I'll revise these as time progresses. Please suggest yours!)
2. An initial glossary - populated mostly on request of readers who suggested terms they wanted defined. So please suggest terms to add, discuss, and raise open questions!
3. The current set of entries for the Devil's Dictionary of Computing.

Discussion Questions

Currently, there are two types of questions in the following:

1. In blue are the **open-ended debate questions** focused primarily on generating discussions.
2. In purple are the **questions focused on learning** about the concepts of each book chapter.

Introduction

The following two questions work well after reading the *Introduction* or after reading more of Section I. For a course, discuss them in breakout groups and take a vote on question 1, then return to the vote a few weeks later to see what you think of it.

1. Is Computing insolvent, i.e. **unable to pay its debts** to societies and the planet?
    a. Why (not)?
    b. How (not)?
    c. How do you see yourself in this?
2. Are current ways of thinking in computing and tech design adequate for facing the role it has in our societies? Why (not)?

Other activity prompts:

- Draft other entries to the Devil's Dictionary. Consider sharing them under #DevilsDictOfComputing (see here)
- Write down your own standpoint / positionality statement and how it has shaped your view on computing and its role in your society.

Part I: Is Computing Insolvent?

1. The Design of Sustainability
    a. How have *you* learned about "sustainability" and from which fields? How do the different perspectives you are aware of compare?
    b. Software systems shape society and raise long-range concerns of sustainability and wide-range concerns of justice. What are the challenges arising from these two types of concerns? How are they linked?
    c. Create a concept map of key ideas you know related to sustainability and discuss how they relate to each other.
2. Just Sustainabilities and the Debts of Computing
    a. How exactly did computing get away with "externalizing its debts" for so long?
    b. How can we hold computing accountable for what some describe as ecocide? What would that accountability look like?
    c. What are some concrete examples of asymmetric vulnerability in the context of sustainability?
    d. What is the connection between environmental sustainability and social justice? What are examples for that?
    e. What is *degrowth* and what is it not? How might it help us reorganize our societies?
    f. How can the 7 principles of data feminism help to mitigate the "weapons of math destruction"?
    g. What are the main factors that enable the debts of computing? How have you experienced them in your personal life?
3. The Myths of Computing
    a. What role would you ascribe to the myths in your own education, your own thinking, the literature you are familiar with?
    b. Are there other myths that you can identify?
    c. If you are or were a computer science student, how has your CS education shaped your thinking? How closely does Breslin's account resonate with you?
    d. How would you explain computational thinking in your own words?
    e. What is the trouble with computational thinking? Where does it fall short?
    f. What were the four myths presented? Have you come across some of them in your personal experience?
4. Problemism: The Insolvency of Computational Thinking
    a. Can you think of a case of problemism that you encountered recently? A new startup, a product, a project, a situation you were in...? How do the myths surface in that case? (Use Figure 4.2 as support and reminder.)
    b. How would you describe *problemism* in your own words, and why is that insufficient for addressing many areas we have challenges in?

Part II: Restructuring

5. Computing's Critical Friends
    a. Do you have critical friends? How would you describe your relationship?

   b. Is there a field with which you would like to form a critical friendship? Why? How would you go about that? What may be difficult about forming and growing that friendship?
   c. What is the role of critical friendships in orienting and reorienting computing? How can critical friends become a part of engineering education?
   d. What is a critical friendship?
   e. Who do you consider as critical friends of computing?
   f. How would you explain the relevance of feminist STS for a technology field like computing?

6. Software is Never Neutral: How Do Values Become Facts?
   a. Follow the exercise on p156. What stands out to you? Which values appear explicitly? Which values may play an implicit role?
   b. What are some other comparative examples like the two maps where values manifest so visibly in design?
   c. Write a fictional story (or chart a diagram) of how some values in these maps might have ended up there. What layers of social organization and decision making are involved in this translation? How do these values *live on* in these maps, what do they do? Where else do they go?
7. People are More Than Rational: Beware the Normative Fallacy
   a. What are the implications of the argument in this chapter on our relationship to so-called "AI"?
   b. Have you experienced difficult interactions between normative perspectives and descriptive perspectives in any of your fields? How do they look like?
   c. How do *you* make decisions in your life? What about them is captured by the 'rational' model, and what else is active in your thinking that goes beyond that model?
   d. What are some of the challenges we have found in researching people's cognitive behaviour?
   e. Can you find an example where you have fallen for the normative fallacy in your thoughts?
8. Problems are Framing: The Discordant Pluralism of Just Sustainability Design
   a. What exactly is the harm in treating sustainability concerns as solvable problems? Consider the case on a global level (e.g. carbon capture and storage), on a regional level (e.g. urban transport planning), on a community level.
   b. How do "problems" and "situations" relate to each other?
   c. What is the nature of "wicked problems"? What exactly happens when someone tries to "solve" them?

Part III: Reorienting System Design

9. Leverage Points for Change: From Insolvent Computing to Just Sustainability Design
   a. What leverage points do you see in your own life, now and in your (prospective) career? Have you already acted on some leverage points in the past?

   b. What obstacles to change can you identify in a sphere of your interest and what kind of change do they obstruct? Are there other leverage points that could act on these obstacles?

10. Critical Requirements Practice
    a. Are you working on a project or about to embark on one? Consider creating an *ideal map* early on, or now. Remember that each response is not the outcome, but a starting point for reflections. Return to the ideal map much later to compare it to how things went and reflect on the consequences.
    b. Develop a CSH map for a case study, e.g. the smart home chapter of the Tech Policy case studies, and reflect on the applicability of CSH. What does it guide you toward?
11. Searching for Just, Sustainable Design Decisions
    a. Would you like to play the game *Undecided?* Please let me know!
    b. Which kinds of decisions in systems design imply what kind of psychological distance? How should we go about traversing it?
12. A Silicone Ring: Social Responsibility and Collective Action
    a. What is your view on the relationship between individual agency and collective action in tech R&D? How do you relate the professional, the private, and the social in your understanding of your own personal responsibility?
    b. Would you like to start a grassroots initiative around a Silicone Ring? Why? Why not? *(Please share the response back with me, I'm very curious :)*
    c. How does the emergence of the tech worker movement relate to the waves of layoffs in tech in the past years and to the significant investments into bullshit generators (pardon, "genAI")? What roles might unions play in this? What leverage point do they address?
    d. What would you like to do about all this?

Conclusions

a. Given everything you read… *is* computing insolvent? Why (not)? Return to the discussion of the Introduction questions. Has your view changed? How?
b. Have you found angles of interventions, leverage points for you to act on?
c. Which is the most urgent book you find yourself wanting to read after this?
d. What do you want to tell the author? *(Please do. :)*

Glossary

This is very much a draft, but it's a start… please add comments for missing entries and clarifications. (For detailed citations see Insolvent references.)

Name	Definition	Source
Asymmetric Vulnerability	Those affected by technology development and design decisions often have little means of influencing the outcomes - especially if the effects are indirect, systemic effects. Those affected today are at a disadvantaged position but in principle can attempt to hold those responsible, accountable. But those affected in the future have no way at all of reaching back in time to hold anyone accountable. This is why their vulnerability is *asymmetric*.	Gardiner, 2014
Autopoiesis	Autopoiesis, a term introduced by cognitive biologists Maturana and Varela, has a complex meaning centered around the idea of self-reproducing systems. Above all, it explains the characteristic of living entities to continuously reproduce themselves in a changing environment, replacing their components (e.g. cells) and adapting their structure (e.g. through healing) while retaining their identity in continuous interaction with their environment.	Maturana & Varela, 1992 & Maturana, 1980
Boundary Critique	The examination of the system boundary used during the analysis of a system and its potential consequences. We can distinguish between first-order and second-order boundary critique. First-order boundary critique reflects on the explicit boundaries of the system under design, while second-order boundary critique reflects on the boundaries of the decision-makers (those involved in the system's design) and their assumptions and questions who is included and excluded in the design process.	Insolvent, p. 244; Midgley 1998 & 2000
Critical Constructivism	A framework of thought brought forth by philosopher Andrew Feenberg. As a philosophy of technology, it draws on critical social theory and philosophy to propose a mode of analyzing and deconstructing technology, both in the more abstract sense and in concrete artifacts, always seeking out alternatives for how things could be, intent on a	Insolvent, p.132 & Feenberg, 2014, p.206; Feenberg 2022

	critical assessment of reason and rationality and how they are embodied in technology. It aims to reconcile the perspectives of marginalized individuals, highlighted through activism, and the creation of new technical artifacts by technical professionals, sometimes arguing for incrementally redesigning technical codes or norms. Feenberg developed this philosophy throughout his career.	
Critical Systems Heuristics (CSH)	CSH is a set of heuristics (i.e. a set of tools and aids for discovering something) that can be used to bring visibility to the boundary judgements of the system being examined and/or designed and reflecting on the justification for each. CSH is a central framework of critical systems thinking (CST).	Insolvent, p.142; chapter 5,10; Werner Ulrich
Dereification	A mouthful of a word that denotes the undoing of reification - i.e. the process of recognizing that what one has treated as a fixed, unchangeable fact really is a current condition that grew over time and that *could be otherwise.* Feenberg describes it at one point as "breaking with the illusory thinghood of social institutions and recovering their contingency". It's a difficult thing to do, but dereification is a a key step in freeing a false consciousness and allow ourselves to comprehend reality more fully, beyond its operationalized concepts. (See also Paolo Freire)	Insolvent, p. 90 & 134 Feenberg: Philosophy of Praxis, p. 238 (and other texts)
Dialectical Rationality	"Dialectical rationality is what transcends the one-dimensional reified thought and supports dereification and reconstruction. . . . Now rationality is associated not only with science and experiment but also with the practical critique coming from those subordinated to the forms of capitalism. Their situated knowledge reveals aspects of reality to which reified rationality is blind." (Feenberg 2014, 206)	Insolvent, p.134 & Feenberg 2014, p. 206
Discordant Pluralism	A perspective of pluralism that accepts that a diversity of perspectives will introduce diverse worldviews that may be in conflict with each other, and which recognizes their contradictions and dissonances as a necessary condition. This pluralism is discordant because it doesn not insist on resolving these contradictions. The term was coined in CST but would seem to be a good description of Escobar's	Insolvent, p.65 & Wendy Gregory

	concept of the *pluriverse.*	
Emergent Properties	Properties of a system that apply to the system as a whole but not to its component parts. (As a very simple example, a word is not the sum of its letters. Its identity emerges from their composition and arrangement.)	Insolvent, p.20
Environment	In systems thinking, the *environment* of a system is the part of the world with which the system can interact or, put differently, the part of the world that is directly relevant for our understanding of the system.	Insolvent, p.21
Environmental Fallacy	A mistake that happens when taking an approach to solving an identified problem without regard for the environment and therefore without understanding the wider effects. The fallacy causes these broader effects to be overlooked, which causes the intervention to fail or have negative consequences. To avoid the fallacy, we must recognize and consider the system's environment. (If we recognize that we should expand the boundary, we still need to draw a boundary: that's inevitable. Our redrawn system boundary still separates the system of interest from its environment.)	Churchman, 1968
Functionalist	A category of social theory that focuses on what each part of a complex whole *does* - what each part's *function* is. It is often implicit and found in many technical approaches that decompose complex social and technical situations *only* according to components with clearly defined functions. Arguably, some aspects of reality are then left out. Functional*ism* as a term highlights that maybe these types of theories take the idea of functionality too far at the expense of other concepts.	Burrell&Morgan, Insolvent, p.21
Guarantor (CSH)		
Hard Systems Thinking	A paradigm of systems thinking that is grounded in a positivist way of thinking that prioritizes the application of scientific principles and mathematical or logical procedures to analytically address social problems.	Insolvent, p.135
Imperialist	A term for the tendency of approaches (such as hard systems thinking) to see everything else as a subset	Insolvent, p.21

	of one of their perspectives - to attempt and subsume them. They act like empires, conquering other grounds and subjecting them to their own views (as opposed to encountering other fields of thoughts as critical friends and initiating dialogues to better understand themselves!)	
Incommensurability	When multiple perspectives meet but have no common scale of measurement, they will struggle to find a common ground of discussion. (For example, dollar values and lived experience are not easily compared.) Incommensurability can also be seen as a part of even more profound differences in how different people and peoples understand and interpret the world to begin with.	
Instrumentalist	Related to functionalism, an 'instrumentalist' view is one that neatly separates between goals (ends) and means and considers only the means, the "how", without questioning the ends and asking who benefits from them. This stands in opposition to a 'critical' view, for example, which will question both and aim to reflect and understand where things come from and who gets to define means and ends.	Insolvent, p.21
Intersectionality / intersectional feminism	Intersectional feminism highlights that gender is one of multiple interacting dimensions for classifying power differentials and highlights how these are connected. Typical dimensions considered beside gender include race, age, ability, religion, ethnicity, nationality, language, class and sexuality. Intersectional feminism highlights how the position of individuals at specific locations — that is, intersections of these dimensions—affects power and privilege in ways that are not captured by an additive accounting of dimensions.	Crenshaw 1991
Legitimacy	A crucial issue in just sustainability design is the *legitimacy* of interventions. Arguably that is more important than whether they are the most efficient option available. One way to look at this is to make visible the justification provided for technology design decisions and the perspectives used to determine them. Another is to consider the process by which all that is decided. Ultimately, if we accept democratic principles, only those affected by a system are able to legitimize the claims of the	Insolvent, p.67, 216 &248

	system. (see asymmetric vulnerability, Critical Systems Heuristics, witness)	
Matrix of Oppression	A central framework of intersectional feminism, the matrix of oppression/domination analyzes domination/oppression through four domains and their interrelations: structural, hegemonic or cultural, disciplinary, and interpersonal.	Patricia Hill Collins (1990)
Methodological Pluralism	Methodological pluralism aims to consider and use multiple different methods, even if their underlying assumptions do not easily combine or if they contradict each other, by shifting the way we think about methodology. It is a central part of CST and supports the combination of different types of methods. This can assist in addressing the politics involved in problem framing and then select an appropriate framework, including 'hard' approaches, for addressing an identified issue.	Insolvent, p.147 & Gregory 1996a
Normative Fallacy	The conflation and mixup of normative and descriptive ways of thinking. Briefly, - *Descriptive* refers to *what is* (for example, how do people choose between things?), - *Prescriptive* refers to *how we should act* (for example, a stepwise procedure for making a choice), - *Normative* refers to *what should be* (for example, a method to evaluate whether one choice is better than another). The normative fallacy occurs when we misapply frameworks with *normative* validity (they are meaningful to describe what should be) as if they had *descriptive* validity, without checking the latter. In decision making research, it occurs when we rely overly on normative frameworks like rationalist theories to *describe* what people actually do.	Insolvent, p.24 and chapter 7
Objective Problems (myth)	The myth suggests that problems are objective (independent) entities, hence they just need to be properly represented in order to be solved	Insolvent, p.12
Operationalist	Specifying a concept by virtue only of the operations that make it measurable. For example, thinking about human decisions purely in terms of (supposed) inputs, processing, and choice. The consequence of operationalism in the	Insolvent, p.86

	social space is often a poor understanding of purpose and meaning. Operationalism has a long and fascinating history.	
Path Dependence	Path dependence is a concept originating in economics that describes how historical events shape and constrain future possibilities. Each choice is contingent on past choices made. One of the consequences is that adverse effects emerge and accumulate over time, one choice at a time, and when an adverse effect becomes apparent, it may be hard to rectify due to constraints that have built up or been entrenched. This historical dependency is important to understand infrastructure and cultural practices. (One often cited and very illustrative example for an effect of path dependency is keyboard layout.) But the concept can be useful on smaller scales too.	Insolvent, p.313 & Liebowitz and Margolis 1995; Arthur 1994
Pluralism	Pluralism refers to the coexistence of multiple different ideas, methods, paradigms, beliefs, … the concept has rich histories (plural! :), including in feminist theory and critical systems thinking. *Discordant* pluralism is a feminist concept in critical systems thinking that suggests we retain the incommensurability of multiple coexisting worldviews without hastening to resolve their differences.	Insolvent, p.65
Positionality	A central concept in feminist theory that describes how a person's perspective is situated within society and how that affects their worldviews, perspectives and social position, to provide more clarity on the perspective from which knowledge is being produced. *Positionality statements* describe that location and have become a common concept in equity, diversity and inclusion.	Insolvent, p.13
Power	The ability of an individual or a group to impose its purpose on others.	Insolvent, p. 141 → Galbraith 1975, 88
Privilege Hazard	A very useful feminist term to describe that a privileged position can create a very specific type of ignorance. After all, it is very hard to see everything when you're removed from everyone else at one isolated location at the very top of a hierarchy. "When data teams are primarily composed of people	Insolvent, p. 132 → D'Ignazio and Klein, 2020, p.28

	from dominant groups, those perspectives come to exert outsized influence on the decisions being made—to the exclusion of other identities and perspectives. This is not usually intentional; it comes from the ignorance of being on top." (Data Feminism)	
Problemism	A rationalist preoccupation with framing and solving problems. Problemism means we have taken problem solving too far. It occurs when we view situations predominantly through the lens of problem solving. This leads us to interpret situations as collections of problems to be solved	Insolvent p. 109; chapter 4;
Rationalistic Design (also: rationalist design)	The design of systems from a purely rationalist point of view by framing every issue as a problem to be solved logically by following a logical process using precise and detailed data. It excludes or marginalizes situated understanding or involvement of human thought, language and action.	Insolvent, p.121,139; Winograd and Flores (1986), p.26
Reference Systems	A concept in Critical SYstems Heuristics, the 'reference system' is like a 'shadow system' to the explicit definition of a system boundary. While the system boundary is usually visible and often negotiated, the reference system rarely is. The reference system denotes a set of explicit and implicit claims that are not further justified - the assumptions that are 'taken for granted', so that any justification breaks off. The questions in CSH are designed to help make the reference system visible so that it can be discussed and negotiated.	Insolvent, p.13 & 137
Reification	A process by which something comes to appear as an unquestionable fact or thing. A central concept in Critical Theory of Technology and discussed at length at various points by Feenberg. Insolvent discusses how reification applies to problem solving.	Feenberg 2014, 2015; Insolvent 88-89
Replicable	The ability to be reused across different contexts, not necessarily yielding the exact same result every time.	Insolvent, p. 217
Situated Knowledges	A term introduced by Haraway (1988) to emphasize that knowledge is not separate from a knowing subject, rather it is always produced from a partial perspective. The plural is intentional: there are many (types of) knowledges.	Haraway (1988), Insolvent, p.134 & Feenberg 2014, 206
Soft Systems	Soft Systems Methodology is a form of learning that	Checkland &

Methodology	engages with problematic (social) situations and organizes the thinking and dialogue about these situations *systemically*, with the intent of facilitating a consensus on what action should be taken to bring about improvement in the situation. (SSM is often misinterpreted and misrepresented: stick to Checkland's writing for understanding it.)	Poulter, 2010, P.192 & Insolvent, p.20
Solvency	The ability to pay one's dues.	Insolvent, p.13
Stakeholders	Any group, individual or non-human entity who can affect or is affected by the implementation of a system	Insolvent, p.2
System	A concept which "embodies the idea of a set of elements connected together which form a whole, this [whole] showing properties which are properties of the whole, rather than properties of its component parts" (Checkland)	Checkland 1981, p. 3
System Boundary	Separates a system from its environment	Insolvent, p.195
Systems Dynamics	An approach to systems thinking that considers measurable variables that represent structural properties of the world and organizes these variables with quantitative causal relationships that allow it to predict overall behaviour as the emergent property. Systems dynamics is sometimes presented as 'systems thinking', but it is not. It is *one type of* systems thinking.	Insolvent, p.20
Systems Thinking	Systems thinking is the overall term used to describe many different approaches to thinking in and across different fields and themes which all share the common objective: to think holistically, to understand complex situations and questions across the boundaries of social, natural, humanistic, economic and technical disciplines. Systems thinking comes in many different forms, has emerged in many different fields and situations, and has evolved very significantly in the past 100+ years. One important distinction can be made between three types or families of systems thinking: hard systems thinking, soft systems thinking and critical systems thinking. These differ in how they understand the relationship between reality, our models, and our actions. For the distinction between	Insolvent, p.18, Jackson 2003; 2019 and Ramage & Shipp 2009, p1

	them, start with Insolvent p18-22; for more, read Ramage & Ship.	
Technological Solutionism	The view, often unspoken, that implementing technical solutions is all we need to do to address all societal issues big and small.	Insolvent, p. 287
Technoscience	The term technoscience, originating in science and technology studies, emphasizes the interlinked nature of technology and science. Technoscience refers to both as one because they are, in many ways, converging.	Felt et al., 2016 p.7
Teleological Fallacy	A concept used by Herbert Simon to claim that it is a mistake to use intentions to explain causality.	Insolvent, p.139 & Ulrich, 1980
Value	"Anything that serves as a basis for discriminating between different states of affairs and ranking some of them higher than others with respect to how much they are desired or cared about or how the personal, social, natural, or cosmic order ought to be" (70). Insolvent distinguishes between - *Explicit* values: those that are articulated, expressed, stated, for example to justify a design decision. - *Implicit* values are those not articulated. For example, a community stakeholder may be invited because the project team values community participation. A value that is implicit can become visible over time, and in fact we can use tools to uncover implicit values and articulate them more explicitly. CSH is one such tool.	Boaz Miller (2014)
Value-neutrality	The myth that technology is neutral - impartial and value-free	Insolvent, p. 92 & Boaz Miller (2014)
Wicked problem	"Wicked problems" are a category proposed by Rittel and Weber in the early 1970s in response to recognizing that many social situations are not just complex and difficult but elusive to the idea that they are *problems we can solve.* Wicked problems are defined by a set of characteristics, a central one of which is that different stakeholders in the situation will disagree on what matters about it and how to evaluate it. Chapter 8 of Insolvent discusses this at length and argues that wicked problems are not problems but *situations*.	Rittel & Weber 1973; Insolvent ch. 8

Witness	A central category in CSH, the 'witness' concept refers to the idea of fair representation of the interests of those affected by technology/design who cannot be present or involved. It is a fundamentally democratic idea, and as with everything in CSH, it is not about simply denoting *who the witness is* for a project but questioning to what degree the interests of those affected are considered and how to justify that boundary.	Insolvent, p. 239; 242-244; 249

Devil's Dictionary of Computing

Name	Definition	Source
Assumptions, n. pl.	Facts about the project at the time of kickoff.	Insolvent, p.154
Conflict, n.	Something that does not match up and needs to be fixed. Typically identified between (a) alternative design solutions for a given problem easily addressed by identifying and modelling the costs, benefits and risks and then trading them off rationally to select the optimum choice (that's what engineers do); or (b) between development branches. (May the wrath of the Gods be upon you in eternity while you slowly roast in hell.) Other forms of conflict are invalid and irrational.	Insolvent, p.198
Facts, n. pl.	Claims made about the environment of technology design for which those who make them forgot to question where they came from, how they came about, which values they embody, whose values these are, whose facts they are, and whose interest that serves.	Insolvent, p.154
Fix, n. & v.	The source of tomorrow's problems.	Insolvent, p.13
Goal Modeling, n.	The illusion that everything that matters can be represented as instrumental achievement to be met; the delusion that anything that can not be represented as instrumental achievement to be met cannot possibly matter. Both are common in requirements engineering.	Insolvent, p.233
Human, n.	Annoying reminders of the real world.	Insolvent, p.102

Innovate, v.	to do onto other people's jobs as you would not have them do unto yours	*(not mentioned in Insolvent)* Inspired by the Golden Rule
Irrationality, n.	Those parts of human life that rationality has no access to.	Insolvent, p.102, 179
Judgement, n.	That which is irrational in human reasoning.	Insolvent, p.102
Kick-Off, n.	The short period in which all active project participants succumb to the illusion that they agree on what the project purpose is.	Insolvent, p.99
Models, n. pl.	The carpets under which, if we look carefully, we can find the human values, politics and moral decisions that have become code, features, qualities, documentation and other technological facts through the social practice we call systems design.	Insolvent, p.156
Problem, n.	Something that can be fixed or solved.	Insolvent, p.13, 198
Problem-solving, n.	The process of fixing things that aren't broken (because they don't exist) and thereby creating new problems.	Insolvent, p.198
Rationality, n.	That form of deductive reasoning which can be encoded and computed.	Insolvent, p.179
Requirements Engineering, n.	The social practice of turning wet, interesting issues such as human values, politics and moral decisions into dry, complicated diagrams (models) that create the illusion that the work to be done is solidly understood.	Insolvent, p.227
Software Engineering, n.	The social practice that converts human values, politics and moral decisions into code, features, qualities, documentation, and other technological facts.	Insolvent, p.95