DOWNLOAD PDF PRELIMINARY NOTES ON VARIOUS TECHNICAL ASPECTS OF TEH CONTROL OF CONCEPTION

Chapter 1 : Preliminary | Define Preliminary at racedaydvl.com

Get this from a library! Preliminary notes on various technical aspects of the control of conception: based on the analysed data from ten thousand cases attending the pioneer Mothers' Clinic London.

Some background orientation will be useful before turning to the details of competing models. A presupposition of most recent discussion has been that science sometimes provides explanations rather than something that falls short of explanationâ€”e. However, with respect to the first contrast, the tendency in much of the recent philosophical literature has been to assume that there is a substantial continuity between the sorts of explanations found in science and at least some forms of explanation found in more ordinary non-scientific contexts, with the latter embodying in a more or less inchoate way features that are present in a more detailed, precise, rigorous etc. It is further assumed that it is the task of a theory of explanation to capture what is common to both scientific and at least some more ordinary forms of explanation. These assumptions help to explain what may otherwise strike the reader as curious why, as this entry will illustrate, discussions of scientific explanation so often move back and forth between examples drawn from bona-fide science e. With respect to the second contrast, most models of explanation assume that it is possible for a set of claims to be true, accurate, supported by evidence, and so on and yet unexplanatory at least of anything that the typical explanation-seeker is likely to want explained. For example, all of the accounts of scientific explanation described below would agree that an account of the appearance of a particular species of bird of the sort found in a bird guidebook is, however accurate, not an explanation of anything of interest to biologists e. However, different models of explanation provide different accounts of what the contrast between the explanatory and merely descriptive consists in. A related point is that while most theorists of scientific explanation have proposed models that are intended to cover at least some cases of explanation that we would not think of as part of science, they have nonetheless assumed some implicit restriction on the kinds of explanation they have sought to reconstruct. Paradigms of this sort of explanation include the explanation for the advance in the perihelion of mercury provided by General Relativity, the explanation of the extinction of the dinosaurs in terms of the impact of a large asteroid at the end of the Cretaceous period, the explanation provided by the police for why a traffic accident occurred the driver was drinking and there was ice on the road , and the standard explanation provided in economics textbooks for why monopolies will, in comparison with firms in perfectly competitive markets, raise prices and reduce output. As we shall see, these empiricist standards and an accompanying unwillingness to employ modal concepts as primitives have continued to play a central role in the models of explanation developed subsequent to the DN model. There are many interesting historical questions about the DN model that remain largely unexplored. At least part of the answer to this last question seems to be that again as explained in more detail below Hempel and other defenders of the DN model inherited standard empiricist or Humean scruples about the notion of causation. They assumed that causal notions are only scientifically or metaphysically acceptable to the extent that it is possible to paraphrase or re-describe them in ways that satisfied empiricist criteria for meaningfulness and legitimacy. It is just this idea that is captured by the DN model see below. Salmon is a superb critical survey of all the models of scientific explanation discussed in this entry. Pitt and Ruben are anthologies that contain a number of influential articles. For the explanans to successfully explain the explanandum several conditions must be met. That is, the explanation should take the form of a sound deductive argument in which the explanandum follows as a conclusion from the premises in the explanans. In this derivation the various Newtonian laws figure as essential premises and they are used, in conjunction with appropriate information about initial conditions the masses of Mars and the sun and so on , to derive the explanandum the future position of Mars via a deductively valid argument. The DN criteria are thus satisfied. But what about the other major component of the DN modelâ€”that of a law of nature? The basic intuition that guides the DN model goes something like this: Thus, according to the DN model, the latter generalization can be used, in conjunction with information that some particular sample of gas has been heated under constant pressure, to explain why it has expanded. By contrast, the former generalization 2. While this example may seem clear enough, what exactly is it that distinguishes true accidental generalizations from laws? This has been the subject of a great deal of philosophical discussion, most of which must be beyond the scope of this entry. It seems fair to say, however, that his underlying assumption is that, at bottom, laws are just exceptionless generalizations describing regularities that meet certain additional distinguishing conditions that he is not at present able to formulate. In subsequent decades, there have been a number of other proposed criteria for lawhood. Although each proposal has its adherents, none has won general acceptance. One possible assessment is that all the DN model really requires is that there be agreement in a substantial range of particular cases about which generalizations are laws. If such agreement exists; it matters little for the DN model if we are unable to formulate completely general criteria that distinguish between laws and accidentally true generalizations in all possible cases. For example, even without an adequate account of lawhood, we can surely agree that 2. Unfortunately, however, matters are not always so straightforward. One important issue raised by the DN model concerns the explanatory status of the so-called special sciencesâ€"biology, psychology, economics and so on. These sciences are full of generalizations that appear to play an explanatory role and yet fail to satisfy many of the standard criteria for lawfulness. A similar point holds for the principles of rational choice theory such as the generalization that preferences are transitive which figure centrally in economics. Other widely used generalizations in the special sciences have very narrow scope in comparison with paradigmatic laws, hold only over restricted spatio-temporal regions, and lack explicit theoretical integration. There is considerable disagreement over whether such generalizations are laws. In the absence of a more principled account of laws, it is hard to evaluate these competing claims and hence hard to assess the implications of the DN model for the special sciences. More generally, in the absence of a generally accepted account of lawhood, the rationale for the fundamental contrast between laws and non-laws which is at the heart of what the DN model requires is unclear: At the very least, providing such an account is an important item of unfinished business for advocates of the DN model. Do such laws explain at all and if so, what do they explain, and under what conditions? In his Hempel distinguishes two varieties of statistical explanation. Since DS explanation involves deduction of the explanandum from a law, it conforms to the same general pattern as the DN explanation of regularities. However, in addition to DS explanation, Hempel also recognizes a distinctive sort of statistical explanation, which he calls inductive-statistical or IS explanation, involving the subsumption of individual events like the recovery of a particular person from streptococcus infection under what he regards as statistical laws such as a law specifying the probability of recovery, given that penicillin has been taken. While the explanandum of a DN or DS explanation can be deduced from the explanans, one cannot deduce that some particular individual, John Jones, has recovered from the above statistical law and the information that he has taken penicillin. At most what can be deduced from this information is that recovery is more or less probable. However if the probability of recovery is low e. The first connects the information provided by a DN argument with a certain conception of what it is to achieve understanding of why something happensâ€"it appeals to an idea about the object or point of giving an explanation. By pointing this out, the argument shows that, given the particular circumstances and the laws in question, the occurrence of the phenomenon was to be expected; and it is in this sense that the explanation enables us to understand why the phenomenon occurred. While an IS explanation does not show that the explanandum-phenomenon was to be expected with certainty, it does the next best thing: There is considerable disagreement among philosophers about whether all explanations in science and in ordinary life are causal and also disagreement about what the distinction if any between causal and non-causal explanations consists in. Instead, adherents of the DN model have generally looked for an account of causation that satisfies the empiricist requirements described in Section 1. To illustrate of this line of argument, consider 2. According to Scriven, 2. Hence, to the extent that it is explanatory, 2. On this view of the matter, we think of 2. Hempel, b, ff which conveys some of the information conveyed by 2. Ideally, singular causal explanations like 2. This strategy will be examined in section 2. The fact that this response is not often adopted by advocates of the DN model is an indication of the extent to which, as noted in section 1, it is implicitly assumed in most discussions of scientific explanation that there are important similarities or continuities in structure between explanations like 2. Explanatory Understanding and Nomic Expectability: Counterexamples to Sufficiency As explained above, examples like 2. There are also a number of well-known counterexamples to the claim that the DN model provides sufficient conditions for successful scientific explanation. Here are two illustrations. This derivation meets the DN criteria and seems explanatory. On the other hand, a derivation 2. Examples like this suggest that at least some explanations possess directional or asymmetric features to which the DN model is insensitive. A derivation can satisfy the DN criteria and yet be a defective explanation because it contains irrelevancies besides those associated with the directional features of explanation. Consider an example due to Wesley Salmon Salmon, , p. There are many other similar illustrations. For example Kyburg , it is presumably a law or at least an exceptionless, counterfactual supporting generalization that all samples of table salt that have been hexed by being touched with the wand of a witch dissolve when placed in water. One may use this generalization as a premise in a DN derivation which has as its conclusion that some particular hexed sample of salt has dissolved in water. But again the hexing is irrelevant to the dissolving and such a derivation is no explanation. One obvious diagnosis of the difficulties posed by examples like 2. According to this analysis, to explain an outcome we must cite its causes and 2. As Salmon , p. On this analysis, what 2. As explained above, advocates of the DN model would not regard this diagnosis as very illuminating, unless accompanied by some account of causation that does not simply take this notion as primitive. Salmon in fact provides such an account, which we will consider in Section 4. We should note, however, that an apparent lesson of 2. More generally, if the counterexamples 2. There are two possible reactions one might have to this observation. One is that the idea that explanation is a matter of nomic expectability is correct as far as it goes, but that something more is required as well. Something like this idea is endorsed, by the unificationist models of explanation developed by Friedman and Kitcher , which are discussed in Section 5 below. A second, more radical possible conclusion is that the DN account of the goal or rationale of explanation is mistaken in some much more fundamental way and that the DN model does not even state necessary conditions for successful explanation. As noted above, unless the hidden structure argument is accepted, this conclusion is strongly suggested by examples like 2. Although the hidden structure strategy deserves more attention than it can receive here, several points seem clear. Are all of these explanations implicit in 2. Railton suggests that an explanatory claim provides information about an underlying ideal text if the former reduces uncertainty about some of the properties of the text, in the sense of ruling in or out various possibilities concerning its structure. As Railton recognizes, this has proposal has many counterintuitive consequences. This contrasts with the widespread judgment that correlations in themselves are not explanatory. In fact, such a claim is apparently maximally explanatory, since it conveys everything that there is to be said about the ideal explanatory text associated with that event. Examples like these suggest that not every claim that reduces uncertainty about the contents of an ideal explanatory text should be regarded as itself explanatoryâ€"such a view allows too much to count as an explanation. Will the economics explanation really be better according as to whether it conveys as much information as possible about these underlying details? Finally, consider the connection between explanation and understanding. One ordinarily thinks of an explanation as something that provides understanding. Relatedly, part of the task of a theory of explanation is to identify those structural features of explanations or the information they convey in virtue of which they provide understanding.

DOWNLOAD PDF PRELIMINARY NOTES ON VARIOUS TECHNICAL ASPECTS OF TEH CONTROL OF CONCEPTION

Chapter 2 : Software design - Wikipedia

Preliminary Notes on Various Technical Aspects of the Control of Conception based on the Analysed Data from Ten Thousand Cases attending the Pioneer Mothers' Clinic, London. Author(s): STOPES, Marie Carmichael. Author Affiliation: Mothers' Clinic for Constructive Birth Control, , Whitfield Street, Tottenham Court Road, London, W. 1.

Overview[edit] Software design is the process of envisioning and defining software solutions to one or more sets of problems. One of the main components of software design is the software requirements analysis SRA. SRA is a part of the software development process that lists specifications used in software engineering. If the software is "semi-automated" or user centered , software design may involve user experience design yielding a storyboard to help determine those specifications. If the software is completely automated meaning no user or user interface , a software design may be as simple as a flow chart or text describing a planned sequence of events. There are also semi-standard methods like Unified Modeling Language and Fundamental modeling concepts. In either case, some documentation of the plan is usually the product of the design. Furthermore, a software design may be platform-independent or platform-specific , depending upon the availability of the technology used for the design. The main difference between software analysis and design is that the output of a software analysis consists of smaller problems to solve. Additionally, the analysis should not be designed very differently across different team members or groups. In contrast, the design focuses on capabilities, and thus multiple designs for the same problem can and will exist. Depending on the environment, the design often varies, whether it is created from reliable frameworks or implemented with suitable design patterns. Design examples include operation systems, webpages, mobile devices or even the new cloud computing paradigm. Software design is both a process and a model. The design process is a sequence of steps that enables the designer to describe all aspects of the software for building. Creative skill, past experience, a sense of what makes "good" software, and an overall commitment to quality are examples of critical success factors for a competent design. It begins by representing the totality of the thing that is to be built e. Similarly, the design model that is created for software provides a variety of different views of the computer software. Basic design principles enable the software engineer to navigate the design process. Davis [3] suggests a set of principles for software design, which have been adapted and extended in the following list: The design process should not suffer from "tunnel vision. The design should be traceable to the analysis model. Because a single element of the design model can often be traced back to multiple requirements, it is necessary to have a means for tracking how requirements have been satisfied by the design model. The design should not reinvent the wheel. Systems are constructed using a set of design patterns, many of which have likely been encountered before. These patterns should always be chosen as an alternative to reinvention. Time is short and resources are limited; design time should be invested in representing truly new ideas by integrating patterns that already exist when applicable. The design should "minimize the intellectual distance" between the software and the problem as it exists in the real world. That is, the structure of the software design should, whenever possible, mimic the structure of the problem domain. The design should exhibit uniformity and integration. A design is uniform if it appears fully coherent. In order to achieve this outcome, rules of style and format should be defined for a design team before design work begins. A design is integrated if care is taken in defining interfaces between design components. The design should be structured to accommodate change. The design concepts discussed in the next section enable a design to achieve this principle. The design should be structured to degrade gently, even when aberrant data, events, or operating conditions are encountered. Well-designed software should never "bomb"; it should be designed to accommodate unusual circumstances, and if it must terminate processing, it should do so in a graceful manner. Design is not coding, coding is not design. Even when detailed procedural designs are created for program components, the level of abstraction of the design model is higher than the source code. The only design decisions made at the coding level should address the small implementation details that enable the procedural design to be coded. The design should be assessed for quality as it is being created, not after the fact. A variety of design concepts and design measures are available to assist the designer in assessing quality throughout the development process. The design should be reviewed to minimize conceptual semantic errors. There is sometimes a tendency to focus on minutiae when the design is reviewed, missing the forest for the trees. A design team should ensure that major conceptual elements of the design omissions, ambiguity, inconsistency have been addressed before worrying about the syntax of the design model. Design Concepts[edit] The design concepts provide the software designer with a foundation from which more sophisticated methods can be applied. A set of fundamental design concepts has evolved. They are as follows: Abstraction - Abstraction is the process or result of generalization by reducing the information content of a concept or an observable phenomenon, typically in order to retain only information which is relevant for a particular purpose. It is an act of Representing essential features without including the background details or explanations. Refinement - It is the process of elaboration. A hierarchy is developed by decomposing a macroscopic statement of function in a step-wise fashion until programming language statements are reached. In each step, one or several instructions of a given program are decomposed into more detailed instructions. Abstraction and Refinement are complementary concepts. Modularity - Software architecture is divided into components called modules. Software Architecture - It refers to the overall structure of the software and the ways in which that structure provides conceptual integrity for a system. Good software architecture will yield a good return on investment with respect to the desired outcome of the project, e. Control Hierarchy - A program structure that represents the organization of a program component and implies a hierarchy of control. Structural Partitioning - The program structure can be divided into both horizontally and vertically. Horizontal partitions define separate branches of modular hierarchy for each major program function. Vertical partitioning suggests that control and work should be distributed top down in the program structure. Data Structure - It is a representation of the logical relationship among individual elements of data. Software Procedure - It focuses on the processing of each module individually. Information Hiding - Modules should be specified and designed so that information contained within a module is inaccessible to other modules that have no need for such information. In his object model, Grady Booch mentions Abstraction, Encapsulation, Modularisation, and Hierarchy as fundamental software design principles. The importance of each consideration should reflect the goals and expectations that the software is being created to meet. Some of these aspects are: Compatibility - The software is able to operate with other products that are designed for interoperability with another product. For example, a piece of software may be backward-compatible with an older version of itself. Extensibility - New capabilities can be added to the software without major changes to the underlying architecture. Modularity - the resulting software comprises well defined, independent components which leads to better maintainability. The components could be then implemented and tested in isolation before being integrated to form a desired software system. This allows division of work in a software development project. Fault-tolerance - The software is resistant to and able to recover from component failure. Maintainability - A measure of how easily bug fixes or functional modifications can be accomplished. High maintainability can be the product of modularity and extensibility. Reliability Software durability - The software is able to perform a required function under stated conditions for a specified period of time. Reusability - The ability to use some or all of the aspects of the preexisting software in other projects with little to no modification. Robustness - The software is able to operate under stress or tolerate unpredictable or invalid input. For example, it can be designed with resilience to low memory conditions. Security - The software is able to withstand and resist hostile acts and influences. Default values for the parameters must be chosen so that they are a good choice for the majority of the users. Portability - The software should be usable across a number of different conditions and environments. Scalability - The software adapts well to increasing data or number of users. Modeling language[edit] A modeling language is any artificial language that can be used to express information, knowledge or systems in a structure that is defined by a consistent set of rules. These rules are used for interpretation of the components within the structure. A modeling language can be graphical or textual.

Examples of graphical modeling languages for software design are: Flowchart is a schematic representation of an algorithm or step-wise process. Jackson Structured Programming JSP is a method for structured programming based on correspondences between data stream structure and program structure. Unified Modeling Language UML is a general modeling language to describe software both structurally and behaviorally. It has a graphical notation and allows for extension with a Profile UML. Alloy specification language is a general purpose specification language for expressing complex structural constraints and behavior in a software system. It provides a concise language base on first-order relational logic.

DOWNLOAD PDF PRELIMINARY NOTES ON VARIOUS TECHNICAL ASPECTS OF TEH CONTROL OF CONCEPTION

Chapter 3 : Preliminary Notes - Atomic Rockets

*Birth Control, London. C.B.C. Bulletin) [Marie Carmichael Stopes] on racedaydvl.com *FREE* shipping on qualifying offers. Preliminary notes on various technical aspects of the control of conception based on the analysed data from ten thousand cases attending the Pioneer.*

Executive Sumary Learn how good your design would perform in the competition, free of charge before paying the nomination fee by simply uploading your project. The preliminary jury will check your entry and provide a score within several days. Upload your design after login from your control panel to benefit from this service. What is a Preliminary Check? When you make a submission, after a period of time or after your submission is totally complete, preliminary tests are performed by a random jury member to provide insights, this consultancy service is free and you get constructive feedbacks on how to improve your presentation. The following aspects are considered: Your design will be either approved or rejected and you will receive an update via email that suggests the next course of action. The jury member will also comment on your project, usually in a constructive way to improve it further via presentation. How much does it cost? Furthermore, if you are not able to wait a few days, an express preliminary checking service is also available on demand. Indicates whether your design is accepted or rejected or if it is still queued. Suggestions that are correlated to the status response. Indicates suggestions by the jury member that performed a preliminary check on your design. How to Get a Free Preliminary Score? Just upload your design and wait. There are no obligations to nominate afterwards. Many designers upload all of their top projets as many as 40 , and wait for a preliminary score for all of their projects and afterwards nominate all the entries that get a good score. A score of 6 or more could be considered good for the preliminary score, and the table below explains it to you better, furthermore there is also possibility to get a free presentation score, the presentation score is different from preliminary score. Preliminary score is from 0 to 10, and the presentation score is from 0 to The preliminary score is about your design and its design quality, the presentation score is about the presentation of your design. You can also make use of the advanced submission optimizer to increase your presentation score as well as potentially the preliminary score by better explaining and presenting your work. If you do not nominate your design, you will not be eligible for the award. However, it does not mean that your design cannot be nominated. This means that your design could still be eligible for winning the award but your design will not appear on the annual results book unless you make some modifications. As you may see, you could still nominate some of the rejected entries. You will get a Preliminary Score only after providing enough details and getting a Presentation Score of 25 or higher.

Chapter 4 : ISO - International Organization for Standardization

Preliminary notes on various technical aspects of the control of conception [electronic resource]: based on the analysed data from ten thousand cases attending the pioneer Mothers' Clinic London / by Marie Carmichael Stopes Mothers' Clinic for Constructive Birth Control London Australian/Harvard Citation. Stopes, Marie Carmichael.

In the following equations, be sure that you use the same units throughout, to minimize that type of error. I generally use meters - kilograms - seconds. For those readers who actually have some knowledge of rocketry: Yes, I know it is inconvenient to use meters per second with all those annoying ciphers. But I still used them throughout this site so as to give one less source of error for those readers who are new to all this. Planetary distances are generally given in AUs, so you have to know how to convert them into the more useful "meters". For those who are familiar with scientific notation but not with computer scientific notation, 1. There is a handy table of these prefixes here. Be told that this website uses the mathematical notations in common use in the United States. A comma is used between each group of three numbers and a period is used as a decimal point, e. Information about the mass and radius of various planets can be found here: This website has a nice table of various watt levels and comparison items so as to get a feel for things. Scientific Hardness RocketCat sez We are going to emphasize scientific accuracy here, is that clear? I want to see no Technobabble , a bare minimum of Handwavium , and low amounts of Unobtanium. Telling how to create such beings might almost be taken as an insult to normal human imagination. In science fiction, however, we do try to maintain standards of realism or at least believability for a rather more knowledgeable and technically sophisticated audience than Homer faced. Our standards are simply based on a better knowledge of the physical universe. Also, there is no intended suggestion that the ghost and his nonmaterial kin either have vanished or should vanish from the inventory. It is perfectly possible for a competent, informed, educated materialist of the late twentieth century to enjoy the works of Sheridan le Fanu or Lyman Frank Baum, not only with the full knowledge that they are not true histories but also safely above the need to prove his open-mindedness by, saying that such things might be possible. Our main point is that for many modern readers, a violation of the laws of thermodynamics by the author can spoil a story just as effectively as having Abraham Lincoln changing a set of spark plugs in a historical novel. Therefore, if we travel to Mars in a story, the vehicle must operate either along physical laws we currently think we know, or at least on more or less convincing extrapolations of those laws. Furthermore, when we get there the Martians, not to mention their lapdogs, saddle horses, dinner steaks, and rheumatism, must not strike too jarring a set of notes against the background which author and reader are, it is to be hoped, visualizing together. It is permissible and even desirable to take the reader by surprise with some of these details, of course. Knowing at the time a negligible amount of real science, I swallowed whole and then regurgitated to my friends everything presented as science in the SF magazines. I knew all about the canals on Mars [1] , the dust pools on the Moon [2] , and the swamps on Venus [3] , about the Dean drive [4] and dianetics [5] and the Hieronymus machine [6]. That last point may even be true. What I needed was a crib sheet. We had them in school for the works of Shakespeare. Given the equivalent type of information about SF, I would not have assured my friends as I did that the brains of industrial robots made use of positrons [14] , that the work of Dirac and Blackett would lead us to a faster-than-light drive [15] , or that the notebooks of Leonardo da Vinci gave all the details needed to construct a moon rocket [16]. This is an example of the problem. Since then I have seen it as attributed to Artemus Ward. What follows, then, is my crib sheet for this book. I have tried to provide a clear dividing line, at the threshold where fact stops and fiction takes over. But even the invented material is designed to be consistent with and derived from what is known today. It does not contradict current theories, although you will not find papers about it in the Physical Review or the Astrophysical Journal. This was mis-translated into the word "canals", which is English for "artificial waterways built by an ancient civilization living on a dying planet". This lead to over a hundred years of Martian based science fiction. All of which instantly became quaint and obsolete when the Mars probe Mariner 4 saw nothing but a bunch of freaking craters. Lunar dust that flows like thick oil was a deadly danger in Arthur C. This led to about sixty years of science fiction set in the dinosaur infested swamps of Venus, until the Mariner 2 mission in revealed just what a hell-hole Venus actually was. SF authors assumed that Venus was at an earlier stage of planetary development than Terra dinosaurs , and Mars was at a later stage decadent dying planet. Norman Dean infamous "Dean Drive" was a bogus reactionless thruster. The fun started back in when the John W. Campbell the father of the Golden Age of Science Fiction and editor of Astounding Science Fiction decided to make some excitement by giving it free publicity. Campbell mentioned that a Dean Drive mounted in a submarine would make "instant spaceship", which lead to a few stories featuring this.

DOWNLOAD PDF PRELIMINARY NOTES ON VARIOUS TECHNICAL ASPECTS OF TEH CONTROL OF CONCEPTION

Chapter 5 : Scientific Explanation (Stanford Encyclopedia of Philosophy)

Preliminary notes on various technical aspects of the control of conception: Books - racedaydvl.com racedaydvl.com Try Prime Books. Go. Search EN Hello.

Computer Science Motivation Computer systems are designed, built and used by people; they are components in larger socio-technical networks that include human beings; they are used for entertainment, finance, defense, transportation, shopping, dating, spamming, studying, etc. The success of a system is determined by the community of people who use it. Hence social and cognitive issues should be addressed in designing, building, evaluating and maintaining computer-based systems. Sadly, such issues are rarely taken sufficiently seriously, and as a result, many systems that are built cannot be used as intended, even more systems are abandoned before completion, cost and time overruns are more the rule than the exception, and user dissatisfaction is high. The lesson that computer systems are not purely technical objects seems very hard to learn, and very costly to ignore. Social Science Motivation The social study of science and technology is a thriving endeavor with a large and diverse community of researchers, who ask how science and technology arises out of communities of scientists and technologists, and how this interacts with larger communities. Information technology seems a particularly interesting and socially important site for research of this kind, and conversely, computer science and mathematics can bring an increased precision to certain aspects of this exploration, including the structure of certain representations. One problem in which we have been particularly interested is to determine the value systems of communities of practice, and of the artifacts that they use. Almira Karabeg, Visiting Scholar, from Dept. Computer Science, University of Oslo; , and summers , Eric Livingston, Visiting Scholar, from Dept. Natural Ethics of Information Artifacts This project explores the hypothesis that information artifacts embody definite but implicit value systems. One case study concerns the value systems of web search engines, including the values of both engine owners and engine users. See The Ethics of Databases , a paper based on an invited panel presentation at the Annual Meeting , 29 October , of the Society for Social Studies of Science ; a separate abstract is available. A similar talk was also given 6 December at the Annenberg Center of the University of Southern California, as part of a seminar series entitled Confronting Convergence ; the paper will appear in a book of the same title. A second case study concerns the value system of mathematicians. This work applies discourse analysis in the sense of sociolinguistics , cognitive linguistics, ethnomethodology and semiotics to mathematical discourse and its natural ethics. There is also a pdf version. You may have to change the orientation of the pages from landscape to seascape; also, this is just a sketch of a paper, with many details missing. A third case study, now in an early stage, concerns the value systems of music. This project is also developing computational methods to identify structures in complex temporal systems, such as music, using ideas from cognitive science, and from complexity and information theories, as well as from cultural studies and sociology. See the webnote Structure and Values in Music for more detail. A fourth case study, also at an early stage, concerns the value systems of email "spam" such as chain letters, bogus virus warnings, virus contaminated email, and solicitations for penny stocks, miracle cures, new religions, miracle inventments, etc. A related project concerns aesthetic values in art. My Editorial Introduction to the first volume pages , and my introductory piece for the second, What is Art? I am also Editor in Chief of the Journal of Consciousness Studies ; for a short overview of the field, see the article Consciousness Studies , in preparation for the Encyclopaedia of Science and Religion; a pdf version is also available. An early study of values, briefly reported in Requirements Engineering as the Reconciliation of Technical and Social Issues pages of Requirements Engineering: Social and Technical Issues, edited with Marina Jirotka, Academic Press, , elicited the values of a small corporate recruitment firm, by analyzing stories and jokes that members told during breaks for coffee, lunch, etc. Although this concerned an organization rather than an information artifact, it did field test some concepts and methods that are important in our later studies. Here are the synopses for these two courses: This course explores issues on the interface between information technology and society, with a special focus on ethical issues. Topics include ethical theory, privacy and security, spam, electronic commerce, the digital divide, open source software, medical informatics, bioinformatics, actor-network theory, ethnomethodology, and some neo-classical economics. For more detail, see the course outline. This course explores issues on the interfaces among technology, science, and society, with a special focus on information technology. Algebraic Semiotics Semiotics is the study of signs and their meanings. This project attempts to make this area more systematic, rigorous and mathematical, as well as to do justice to its social foundations. Algebraic semiotics combines aspects of algebraic specification with social especially ethnomethodological semiotics. One major application area is user interface design. A particular case of this is the representation of mathematical proofs, as studied in the Tatami project , where our objective is to make proofs as understandable as possible. Many of these ideas have been implemented in the Kumo system using web technology plus some ideas from narratology the systematic study of narrative - see Notes on Narrative. A recent overview paper on the Kumo system, including the latest version of the Tatami conventions , which are its interface guidelines, can be found in Web-based Support for Cooperative Software Engineering , by Joseph Goguen and Kai Lin. In Annals of Software Engineering, volume 12, No. A pdf version is also available. The best source of detailed information on algebraic semiotics is the paper An Introduction to Algebraic Semiotics, with Applications to User Interface Design. Basic material on user interface design can be found in the rather extensive class notes for the course CSE , along with motivation and some basics of algebraic semiotics, including the systematic measures for the quality of representations that it provides. Some further applications are informally discussed in the short webnote Information Visualization and Semiotic Morphisms. For some informal background, see the webnote Semiotic Morphisms and the paper On Notation. More information, including a bibliography and further links, can be found on the algebraic semiotics homepage. Requirements Engineering This project takes the view that requirements engineering is the attempt to reconcile the technical and social aspects of large development projects. Here is its abstract: Some of the most challenging problems in requirements engineering concern the user interfaces to complex systems. For many systems, a large part of the effort goes into the user interface, which also plays a large role in user perceptions of system quality. However, this area raises difficult issues in cognition, the structure of interaction, and even ethics. Methods that can approach such problems include semiotics, ethnography and cognitive psychology, which help to put context into the analysis. The most novel techniques used include algebraic semiotics, which provides measures of structural quality, and literary theory and analysis, which view interactive graphics as "text. Semiotic Morphisms , by Joseph Goguen. An informal introduction to some basics of algebraic semiotics; for some formal details, see An Introduction to Algebraic Semiotics, with Applications to User Interface Design , and for additional information, see CSE , a user interface design course using semiotics. Other Topics Blending has been postulated by Gilles Fauconnier and Mark Turner as a new fundamental cognitive operation, which combines conceptual spaces; it has been shown to play a fundamental role in the theory of metaphor. Mathematical foundations can be provided by the rather recent and very abstract field called "category theory" it is not related to the area of psychology of the same name , by noting that sign systems together with semiotic morphisms form a category. The appropriate notion of colimit for such categories has interesting properties that make it suitable for studying the blending sign systems and their morphisms. Some interesting generalizations and new properties of blending also arise out of this framework. See also the webnotes Semiotic Morphisms and Information Visualization and Semiotic Morphisms for brief intuitive introductions to certain issues. The notion of discourse type is a natural extension of the notion of grammar from the level of individual sentences to the level of discourse. A discourse unit has defined boundaries, and a describable internal structure; a discourse type characterizes the structure of a class of discourse units. The structures of several different discourse types have been studied in some detail, including planning, reasoning, and command and control. See the following papers for more detail unfortunately, none of these are available online: Checklist Interruption and Resumption: Communication Training for Aircrews: Slides for keynote address at conference on Sociology of Informatics, Kyoto University, December ; discusses semi-formal application of algebraic semiotics to software design, emphasizing the roles of values and compassion. Marshalls ideas from philosophy, cognitive science, and sociology, in an attempt to discern some limitations of ontologies in the computer science technical sense. See also Workshop on Potential of Cognitive Semantics for Ontologies , for which this is was keynote address. Against Technological Determinism ; a short essay defining technological determinism and pointing out its dangers; in CVS: The original html version is also available on the CSE website. A blog , with notes on sociology of technology, logic, computer science, life, and all that. The blog has partially recovered from a serious security bug in its underlying Pivot system: Discusses the informal application of algebraic semiotics to large scale design problems, such as organizations, and brings in the role of compassion. Slides for the talk and the original abstract are also available. Consciousness Studies , in Encyclopedia of Science and Religion, vol 1, ed. Wentzel Vrede van Huyssteen, Macmillan Reference, , pp. This is a brief survey of the emerging field of consciousness studies by request of the editor, this article contains more on religion than normally appears in my papers. Slides are available for a science-oriented lecture version of Consciousness Studies , given as part of a seminar for mental health professionals offered by the University of California at Berkeley Extension, 27 September Are Agents an Answer or a Question? Though not strictly a social science paper, it includes an analysis of the social and historical context of agent research, and a critique of agent technology based on the social behavior of real human agents. Slides for The Reality of Mathematical Objects , a lecture by Joseph Goguen for the UCSD Science Studies Colloquium, 20 November ; applies discourse analysis in the sense of sociolinguistics , cognitive linguistics, ethnomethodology and semiotics to mathematical discourse and its natural ethics. There is also a pure postscript version. See also What is a Proof? A theory of information based on social interaction; it provides philosophical foundations for our approach to semiotics and requirements engineering. The Ethics of Databases , by Joseph Goguen , paper based on an invited panel presentation at the Annual Meeting , 29 October , of the Society for Social Studies of Science ; a separate abstract is also available. Lecture also given 6 December at the Annenberg Center of the University of Southern California, in the Confronting Convergence Seminar series, and to appear in a book of the same title. This is a naturalistic study of the values embedded in web search engines. Notes on Narrative , by Joseph Goguen. A brief overview of some techniques for the analysis of stories, including summaries of the structural theory of narrative, and techniques for the extraction of value systems from stories. Written for use in UCSD computer science courses. An overview of the Tatami project and version 4 of the Kumo proof assistant and website generator, focusing on its design decisions, its use of multimedia web capabilities, and its integration of formal and informal methods for software development in a distributed cooperative environment. A critical comparison of methods for determining user requirements for systems, using a social science point of view, and including many social science methods. Systematic justification of the style guidelines for the proof websites generated by an older version of the Kumo system , based on algebraic semiotics, narratology, cognitive science, etc. This is the basic paper on algebraic semiotics, with algebraic theory and many examples, especially from user interface design. A preliminary version appeared in Proceedings, Conf. This webpaper is an intuitive discussion of how the notion of semiotic morphism from algebraic semiotics can help with scientific visualization and related problems.

Chapter 6 : Engineering design process - Wikipedia

The ability to manage errors and unexpected events successfully during an operation is a marker of surgical excellence. By enlarge, imminent errors include such factors as fatigue, communication or patient related factors, such as a difficult intubation, while systemic errors concern organizational matters such as shift patterns and staffing.

Research[edit] Various stages of the design process and even earlier can involve a significant amount of time spent on locating information and research. Reverse engineering can be an effective technique if other solutions are available on the market. The design requirements control the design of the product or process being developed, throughout the engineering design process. These include basic things like the functions, attributes, and specifications - determined after assessing user needs. Some design requirements include hardware and software parameters, maintainability , availability , and testability. The feasibility study is an evaluation and analysis of the potential of a proposed project to support the process of decision making. It outlines and analyses alternatives or methods of achieving the desired outcome. The feasibility study helps to narrow the scope of the project to identify the best scenario. A feasibility report is generated following which Post Feasibility Review is performed. This is based on two criteria: It is important to have engineers with experience and good judgment to be involved in this portion of the feasibility study. This stage of a project is done to minimize the likelihood of error, manage costs, assess risks , and evaluate the potential success of the intended project. In any event, once an engineering issue or problem is defined, potential solutions must be identified. These solutions can be found by using ideation , the mental process by which ideas are generated. In fact, this step is often termed Ideation or "Concept Generation. Normally, a preliminary sketch and short report accompany the morphological chart. The vital aspects of the conceptualization step is synthesis. Synthesis is the process of taking the element of the concept and arranging them in the proper way. Synthesis creative process is present in every design. Preliminary design[edit] The preliminary design, or high-level design includes also called FEED , often bridges a gap between design conception and detailed design, particularly in cases where the level of conceptualization achieved during ideation is not sufficient for full evaluation. So in this task, the overall system configuration is defined, and schematics , diagrams , and layouts of the project may provide early project configuration. This notably varies a lot by field, industry, and product. During detailed design and optimization, the parameters of the part being created will change, but the preliminary design focuses on creating the general framework to build the project on. Fabrycky describe it as: Design for manufacturability[edit] Design for manufacturability DFM is the general engineering art of designing products in such a way that they are easy to manufacture. Operating parameters Operating and nonoperating environmental stimuli Test requirements.

Chapter 7 : A' Design Award and Competition - Preliminary Checks

The _____ Technical Management Process transforms a broadly stated decision opportunity into a traceable, defendable, and actionable plan. employ procedures, methods, and tools, such as trade studies, for identifying, representing, and formally assessing the important aspects of alternative decisions to select an optimum decision.

Chapter 8 : Social Aspects of Information Technology

He passed the preliminary and went on to the finals. a boxing match or other athletic contest that takes place before the main event on the program: A preliminary was fought at a preliminary examination, as of a candidate for an academic degree.