Artifacts: The Importance of Communications

Language
Syntax (the grammatical arrangement of words)
Semantics (the meaning of words, and sentences)
But what about other forms of communication?
Art
What meaning does the Mona Lisa convey?
http://en.wikipedia.org/wiki/Mona_Lisa
Music
What imagery does an instrumental conjure?
Imagery
9/11
Graphical Symbols and Icons
What does a Swastika mean to you?
http://en.wikipedia.org/wiki/Nazism
Rorschach Ink Blots
http://en.wikipedia.org/wiki/Rorschach_inkblot_test
Graphs
Data Flow Diagram
State Transition Diagram
http://en.wikipedia.org/wiki/State_diagram
Use Case Diagram
http://www.pacestar.com/images/sampuc.gif
Schematic Diagram
http://oldradio.onego.ru/SCHEMES/sc_strela.jpg

Software Engineering is the study of a process that, first and foremost, relies on communications for success. You will read, in Frederick Brooks book, the Mythical Man-Month, that there may not be a "silver bullet", or a single element that guarantees that a software project will succeed. But, if there is, it's probably the skill and thoroughness of communications in all of its grammars and manifestations.
Tools and Esprit d' Corps: Three Bucket Theorem

Professor Stuart's "Three Bucket Theorem" is another view of many observations and assertions by Frederick Brooks. The 3BT (3 Bucket Theorem) predicts that the outcome of nearly all human endeavor is generally predictable based upon the distribution of people into 1 of 2 "esprit d' corps" buckets, and a third bucket called "tools and processes." He asserts that 1 bucket contains all of the tools, material, and possible processes in the universe. This leaves two remaining buckets. One contains people who are considered "thoroughbreds". These people get along, communicate extremely well, aren't afraid to learn, aren't afraid to use their ingenuity, are goal oriented, and driven to succeed. The third and final bucket he calls the "malcontents" bucket. This bucket is filled with people who don't get along, avoid learning, avoid teamwork, are unreliable, and have as their individual goals, their individual, short term welfare. Professor Stuart then asserts that those individuals in the "thoroughbred" bucket will succeed, regardless of what does or doesn't exist in the tools bucket. Conversely, those individuals in the "malcontents" bucket will fail, regardless of what's in the tools bucket. He asserts that successful human endeavor is always a function of individual personalities, and the assemblage of those personalities into a social group. Finally, Professor Stuart asserts that the bucket called "tools" is designed to help those teams comprising individuals who fall between the thoroughbreds and malcontents. Teams with a mix of both, and personalities who have a mix of qualities and weaknesses, are the stuff of teams requiring tools in order to increase their chances of successful project outcomes. Even then, an examination of relatively large teams reveals that a small fraction of the team are "heavy lifters" and carry a disproportionate burden, and are thus disproportionately responsible for team productivity.

"People Are Everything"

Brooks says "People Are Everything..." which reinforces his "...conviction that the quality of the people on a project, and their organization and management, are much more important factors in success than are the tools they use or the technical approaches they take." He goes on to say, "...Boehm's COCOMO model finds that the quality of the team is by far the largest factor in its success, indeed four times more potent than the next largest factor. Most academic research on software engineering has concentrated on tools." Brooks cites the work of DeMarco and Lister wherein they theorize that "The major problems of our work are not so much technological as sociological in nature."

"Tower of Babel"

In Chapter 7 of the Brooks text, Brooks asserts that "The Tower of Babel project failed because of lack of communication and of its consequent, organization." It's possible that the reunion project will fail for the same reasons.

"Conway's Law"
Brooks quotes "Conway's Law" which predicts: "Organizations which design systems are constrained to produce systems which are copies of the communication structures of these organizations."

"Documentary Hypothesis" Closes Gaps

Brooks says, "Only when one writes do the gaps appear and the inconsistencies protrude."

"Building Blocks for Teams"

According to the "Building Blocks for Teams" website at http://tlt.its.psu.edu/suggestions/teams/about/definition.html, quoting Katzenbach and Smith, "A team is a small number of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they are mutually accountable."

Conclusion

Communications are the "silver bullet" Brooks seeks. Those teams that communicate well, do well. Those that don't, tend to fail. The grammar and medium of communications is as important as the fact that dialog occurs. In order to master Software Engineering, one must first master the various grammars and mediums of communications.