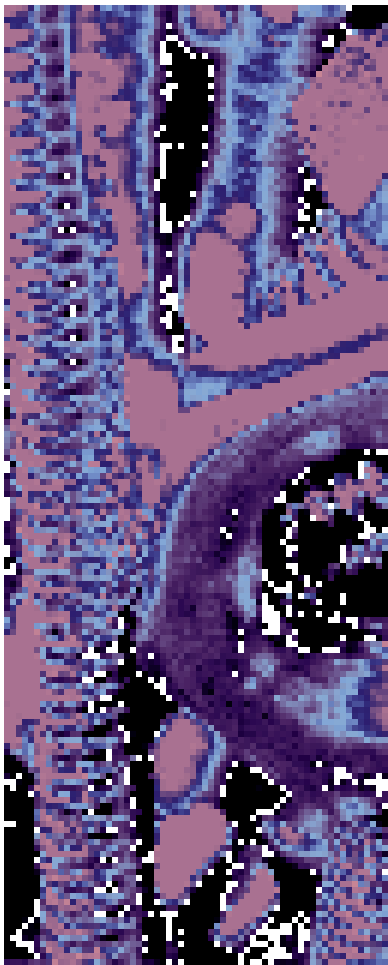
Design:

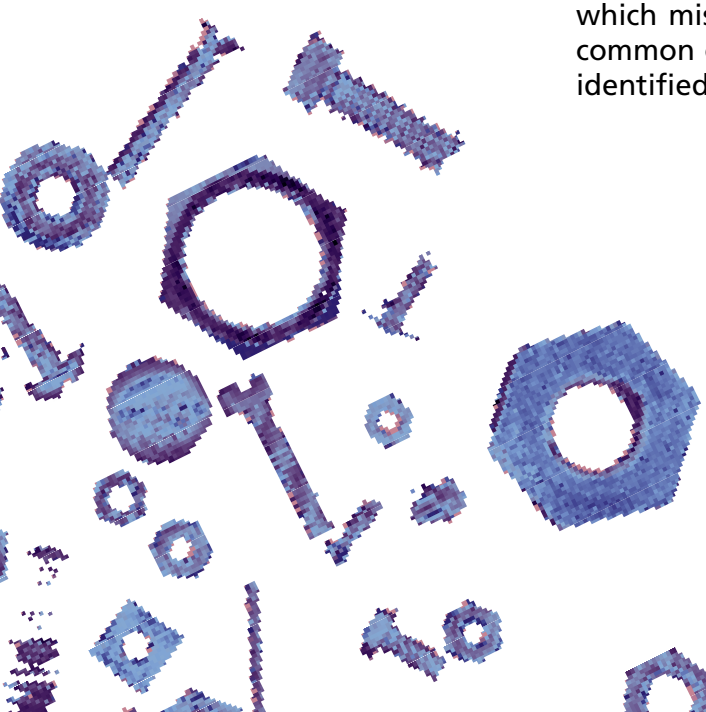
Purpose, Form and Meaning

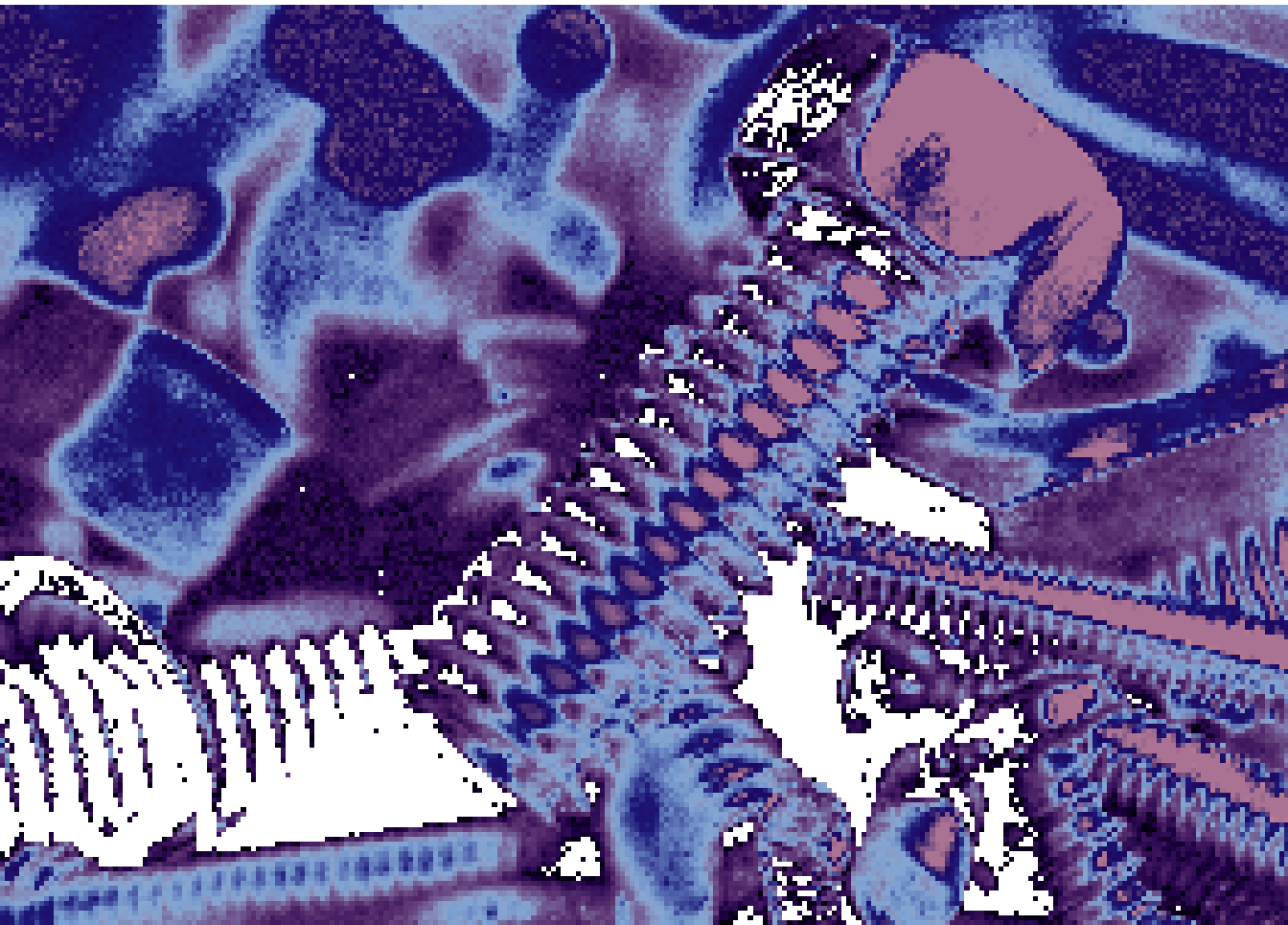


John F. Pile

1 Identify

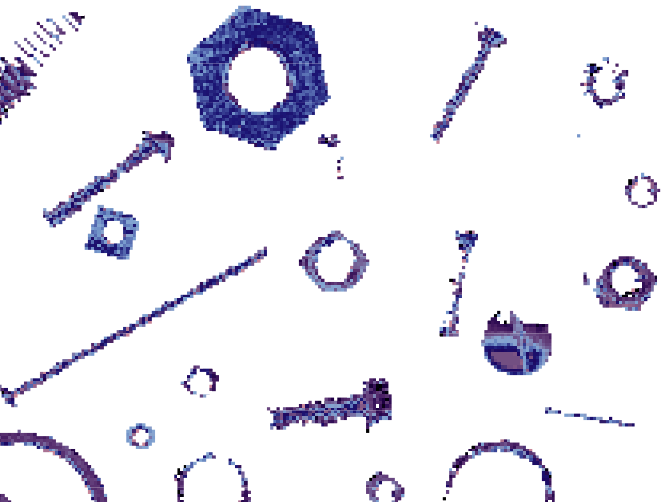
The problem needing solution must be identified and stated with clarity. A problem not clearly identified or mis-stated can lead to aimless and disorganized effort which misses the point of the matter at hand. It is a common observation that a problem fully and clearly identified and stated is, as often as not, half-solved.

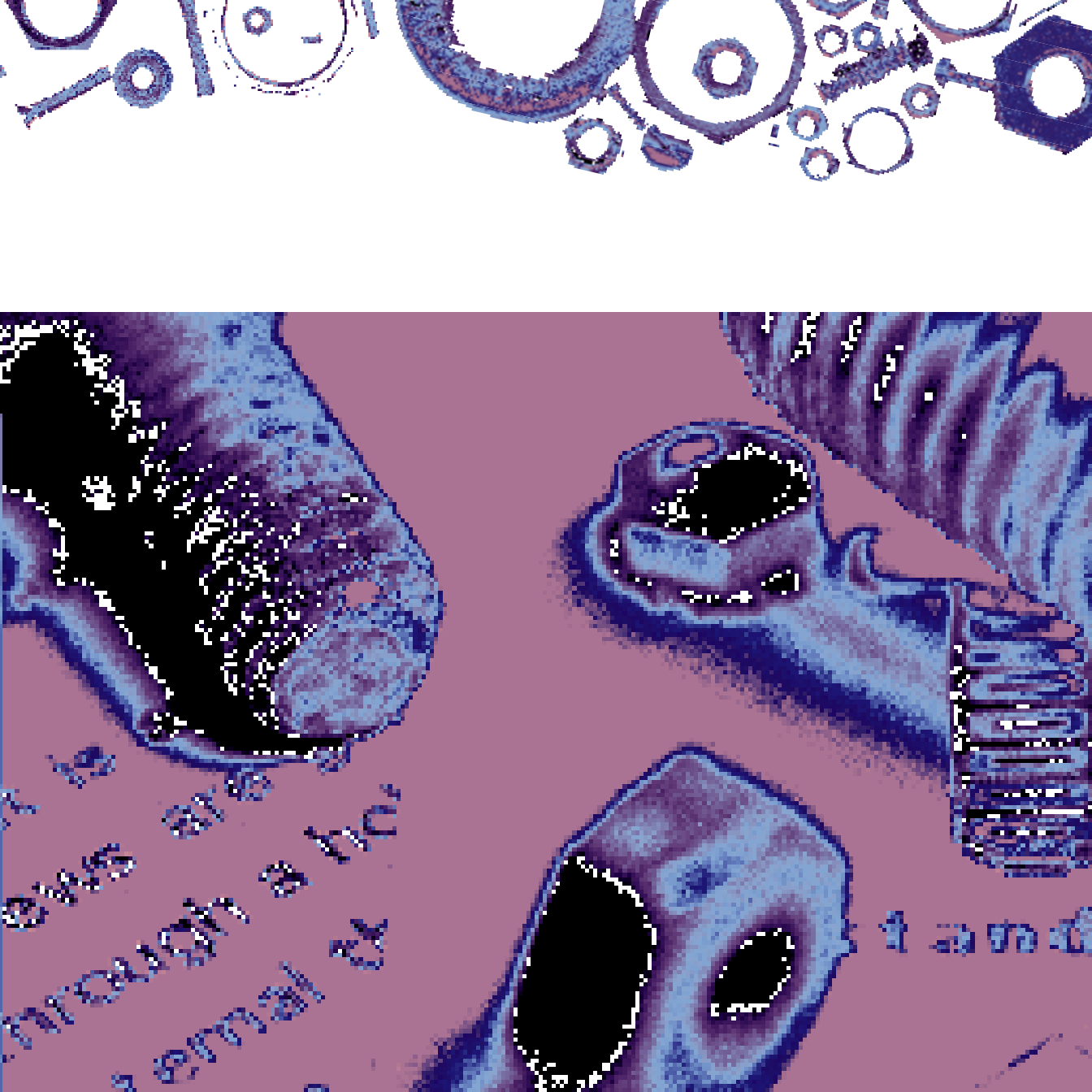




2. Research

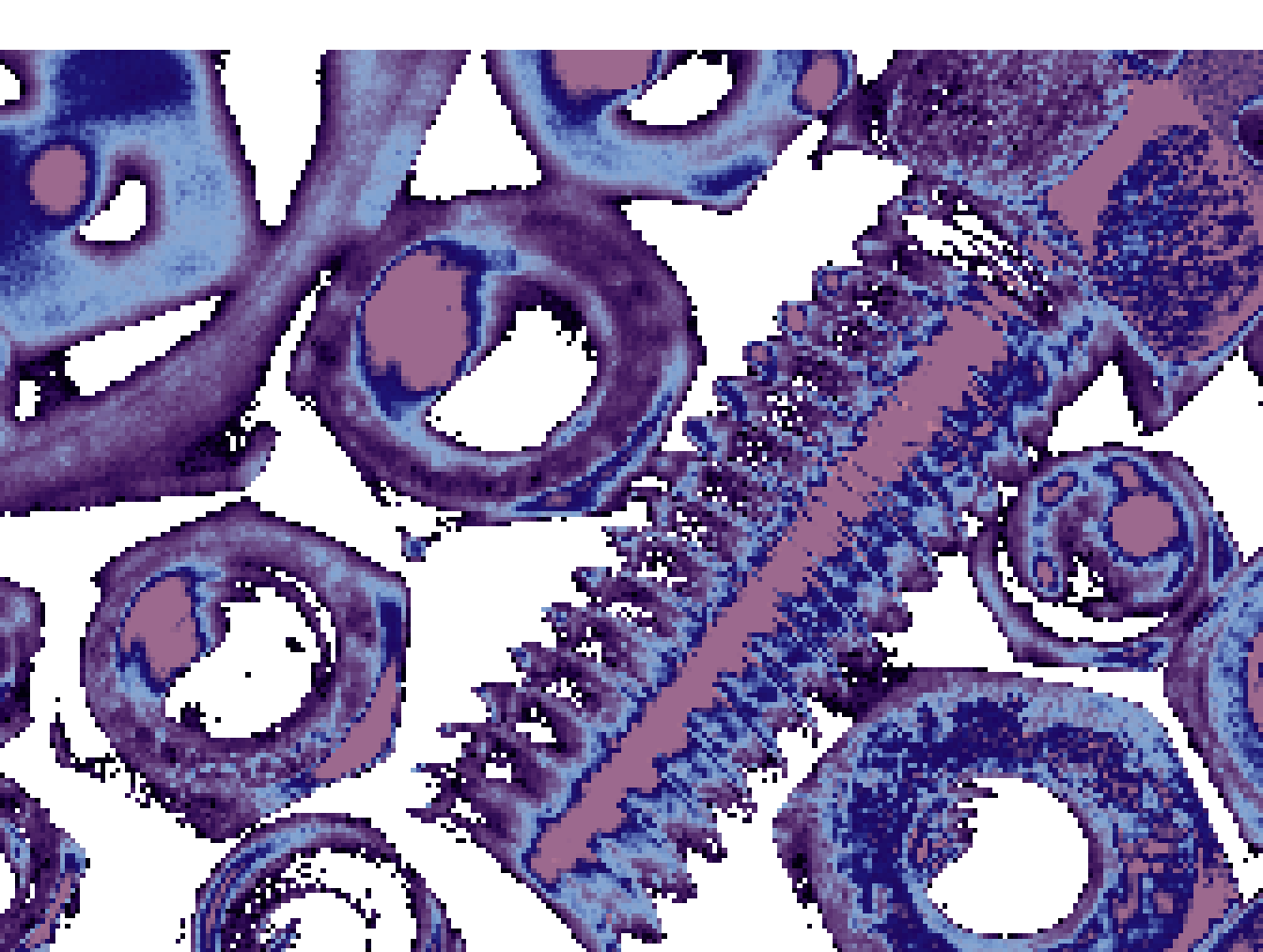
Information bearing on the problem and its potential solutions needs to be marshalled and made available in a clear and accessible way. The thinker, concerned with a particular problem, needs to have as much relevant information in memory as possible and, when the limits of memory are reached, overflow information at hand for consultation as needed. This aspect of problem solving is most often called research.





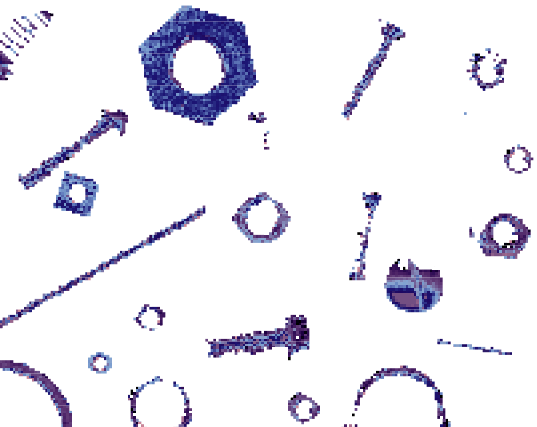
3 Creative

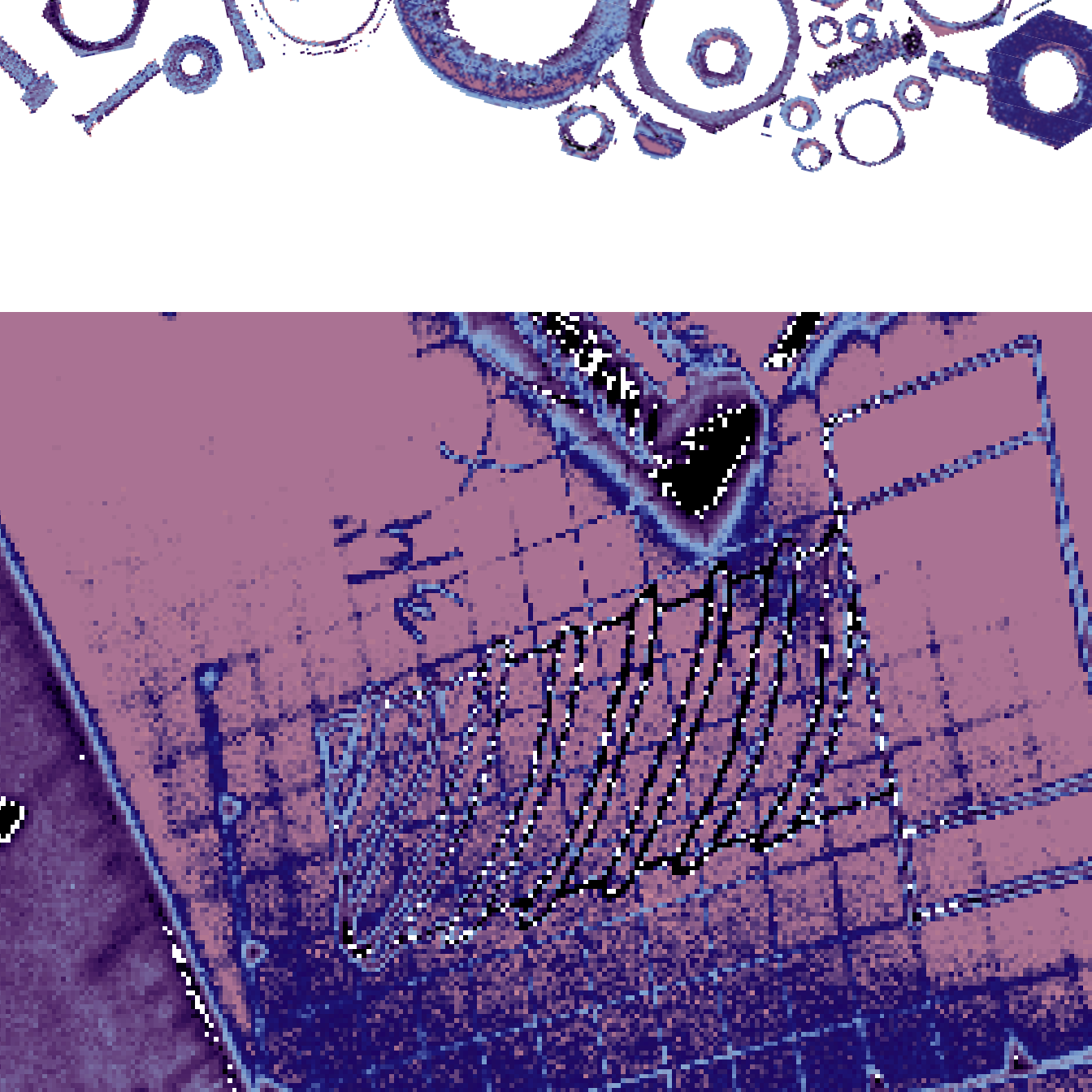
The step usually called creative can now be under taken. Insofar as we understand the thought process involved, they seem to consist of simultaneously holding the problem in mind while calling up from memory the specific information assembled through research and the more general information acquired through life experience, education and whatever other sources have stocked the memory with varied data. This information seems to be held in layers of memory that range downward from the recently acquired and easily accessible to the deep levels, usually called unconscious. The familiar effort of trying to think appears to be a deliberate churning of resources of stored information held in the memory. As information comes to consciousness, it is matched against the perceived problem in an effort to find concepts, action proposals or forms that relate in some useful way to the problem at hand. When some pieces of remembered information seems to connect with an aspect of the problem, we recognize a possible 'fit'* in much way the worker of a jigsaw puzzle recognizes the shape of a piece as a possibility for a specific place in the incomplete puzzle. In this way, a potential solution, or part of a problem solution, surfaces and can be noted or stated as a proposal.



4 Testing

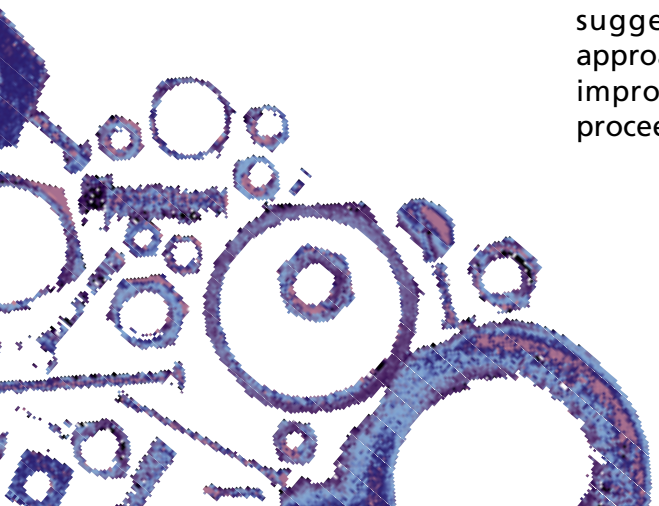
Each proposal for problem solution (usually only a fragment of the complete solution), once stated, is ready for testing in some concrete way - in words, drawings, models or prototypes that can then be evaluated in one way or another. At a simple level, the sketch of an idea on a pad is such a test. It makes a proposed solution or part of a solution accessible to the imaginary testing that takes place as it is viewed and considered as it would work out if realized. Models and mock-ups permit more realistic testing. The tests of models in wind tunnels and test tanks, or of libratory prototypes, are more literal tests of proposed problem solutions. Many such tests are necessary to lead thinking toward gradually better proposals. Each test leads to the next step, which is…

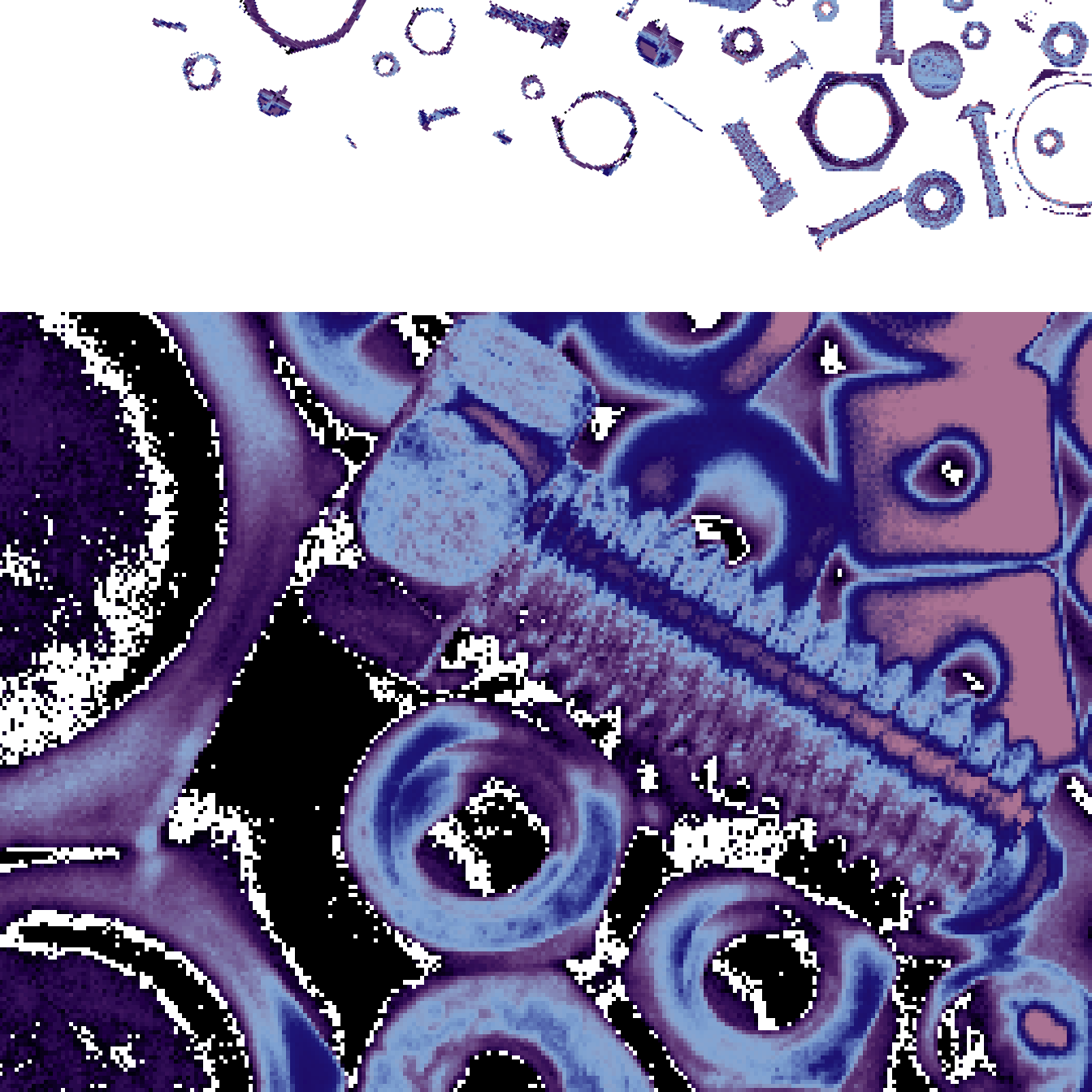




5 Evaluation

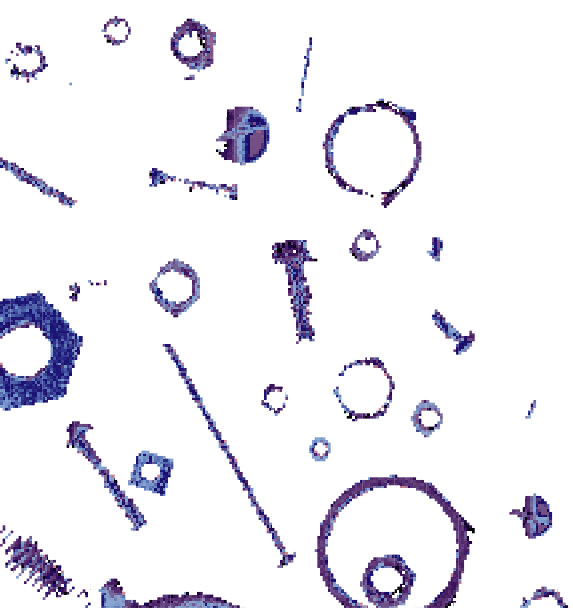
Evaluation - aimed at sorting out what aspects of the proposal are successful and what aspects are not. This will usually make it possible to repeat steps 3 and 4 with a greater degree of success. This process of recycled proposal and evaluation can lead to gradually improving success, until a point is reached where the level of success is sufficiently good to suggest that further effort will not generate enough improvement to be worthwhile. The law of diminishing returns suggests that as an ideally perfect solution is approached, more and more effort offers less and less improvement. At some point it is appropriate to proceed to…

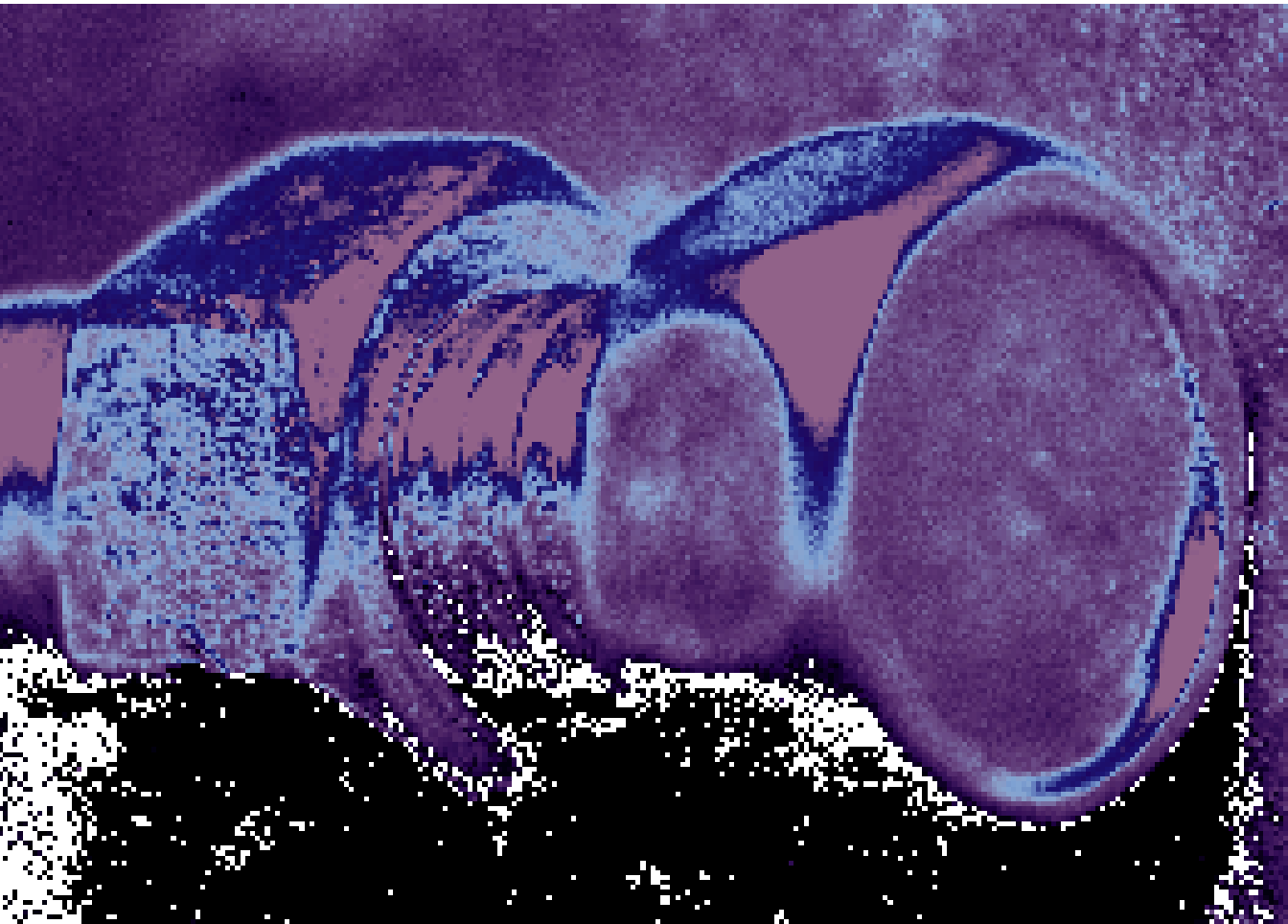




6 Implementation

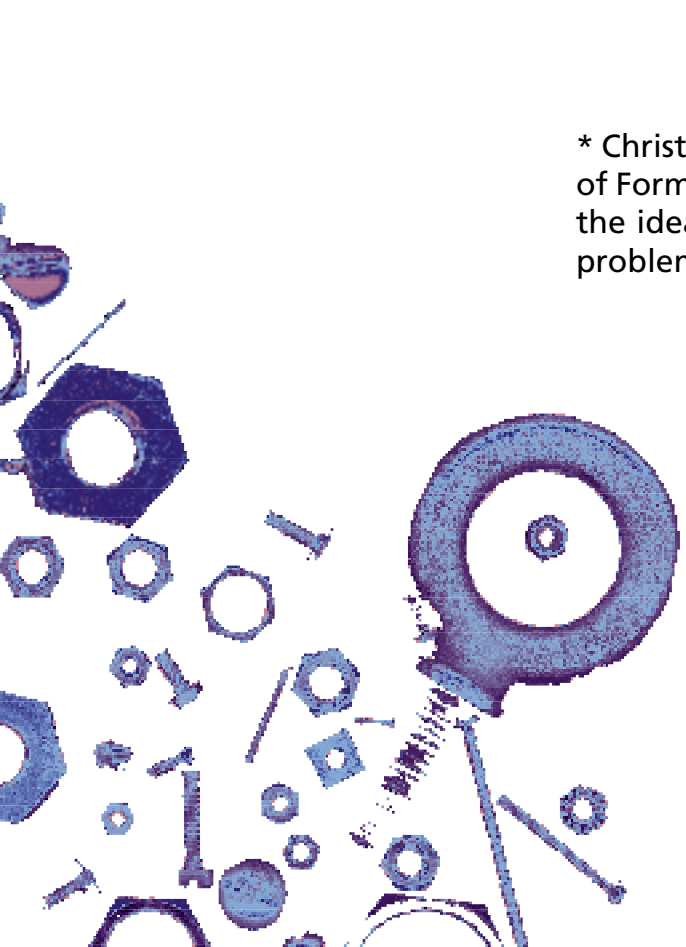
Implementation (deployment) of the designed problem solution. When it is realized and put into use, certain shortcomings will usually be discovered that confirm the theoretical tests of step 4. As time passes, the original problem statement may become obsolete and new information will become available - until, after the passage of some time, the entire process can be undertaken afresh from the beginning. We say 'the problem has changed' and therefore the old solutions have become inadequate.

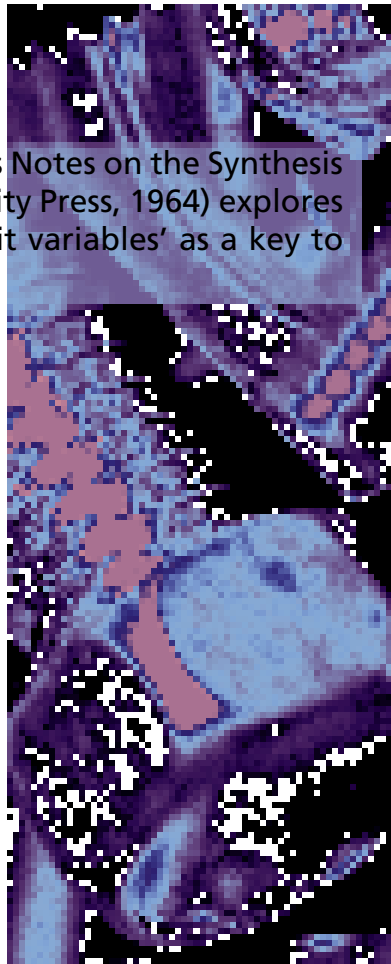




Photographs and book design by

Kevin Sepe





* Christopher Alexander's Notes on the Synthesis of Form (Harvard University Press, 1964) explores the idea of 'fit and mis-fit variables' as a key to problem solution.

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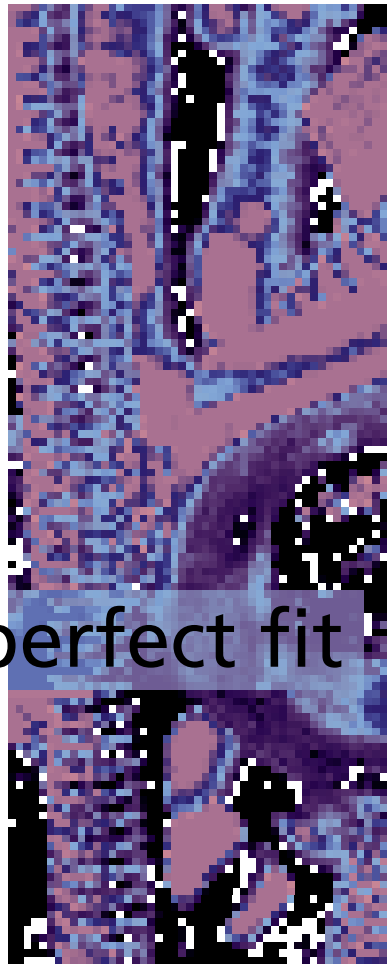

Finding the perfect fit

John F. Pile