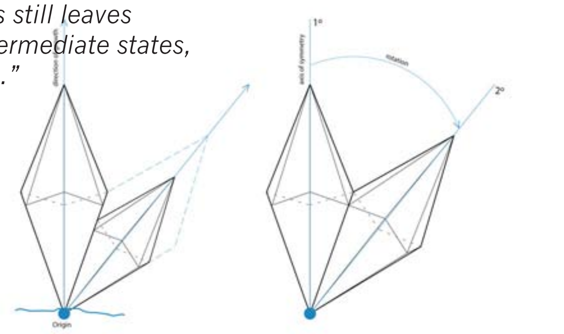
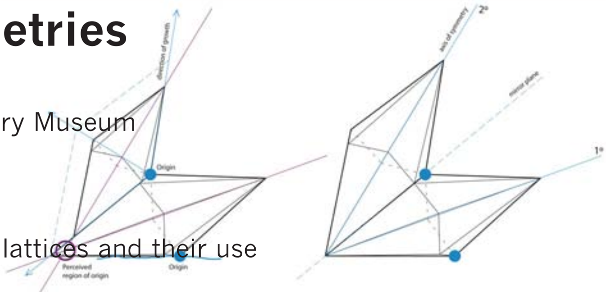
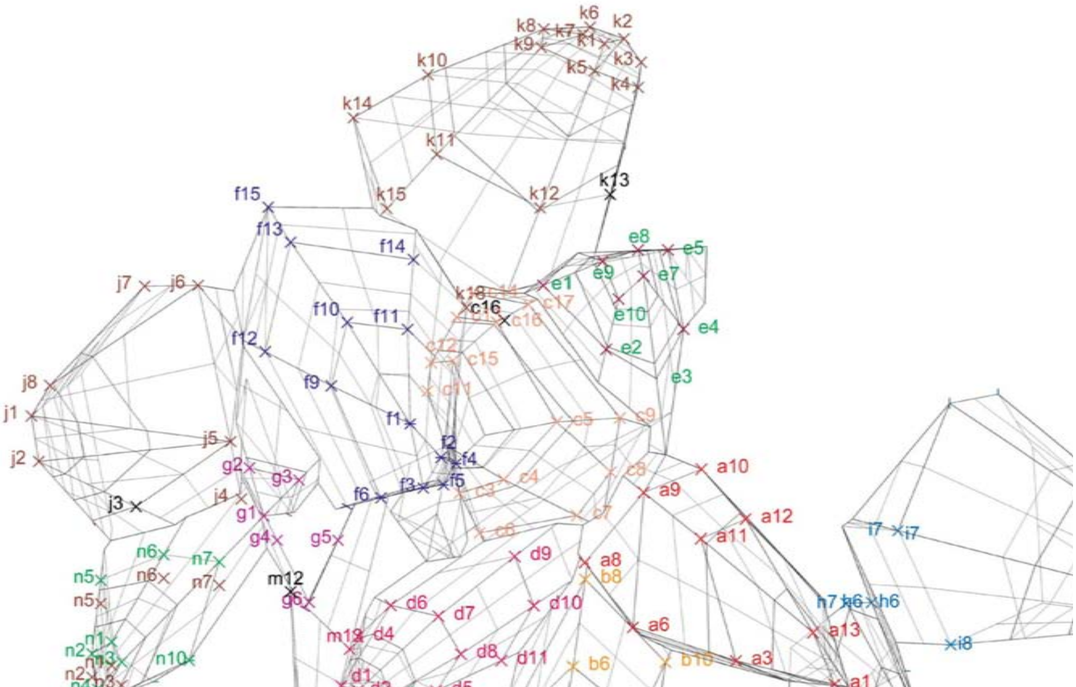
"We took as our point of departure cases of this kind on the geological stratum, the crystallin stratum, and the physichemical strata, wherever the molar can be said to express microscopic molecular interaction ("the crystal is the macroscopic expression of a microscopic structure"; the "crystalline form expresses cetain atomic or molecular characteristics of the constituent chemical categories"). Of course, this still leaves numerous possibilities, depending on the number and nature of the intermediate states, and also on the impact of exterior forces on the formation of expression."
Deleuze & Guattari, A Thousand Plateaus



2. Crystalline Systems and Symmetries



Fri, 9.10.:	10am: Visit Mineral Collection, National History Museum hand-out of overall brief
Mon, 12.10.:	2 – 4 pm: Rules: **ideal** / Input by Toni Kotnik Introduction into the mathematics of Bravais-lattices and their use for the classification of crystal structures
Wed, 14.10.:	10am / all day: work in unit space & individual tutorials 3.30 - 5 pm: seminar **'Objectivity is romantic'** presentation by Akis, Alan and Sunny
Fri, 16.10. :	10am / all day: work in unit space / individual tutorials
Mon, 19.10.:	10am: work in unit space & individual tutorials 2 – 4 pm: Rules: **real** / Input by Toni Kotnik Vector-based methods of comparison between ideal and real crystal structure and extraction of rules of deformation
Wed, 21.10.:	10 am – 4 pm: Digital **modelling** / Input by Toni Kotnik Workshop on digital modelling of the rule set of the crystal under consideration and possibilities of contextual concatenation
Fri, 23.10.:	10am: all work in unit space / individual tutorials
Mon, 26.10.:	individual tutorials
Wed, 28.10.:	individual tutorials
Fri, 30.10.:	individual tutorials
Mon, 2.11.:	Pin up



A: Real

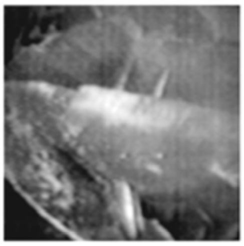
This strand of the work looks at the study of the unique ‘habits’ or morphology of an actual crystal specimen.

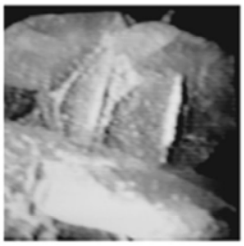
Any mineral specimen is a unique material and formal system. The specific chemical composition, physical properties, growth conditions (i.e. heat, pressure, space) and formation environments it was subjected to gave rise to a unique articulation reflecting these. In mineralogy the description of the appearance or ‘habit’ of a crystal is often the starting point in the recognition and identification of specimens.

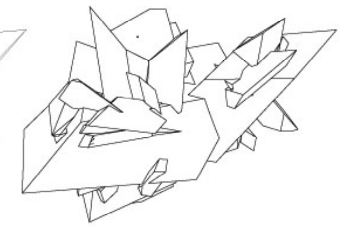
Task: Replication

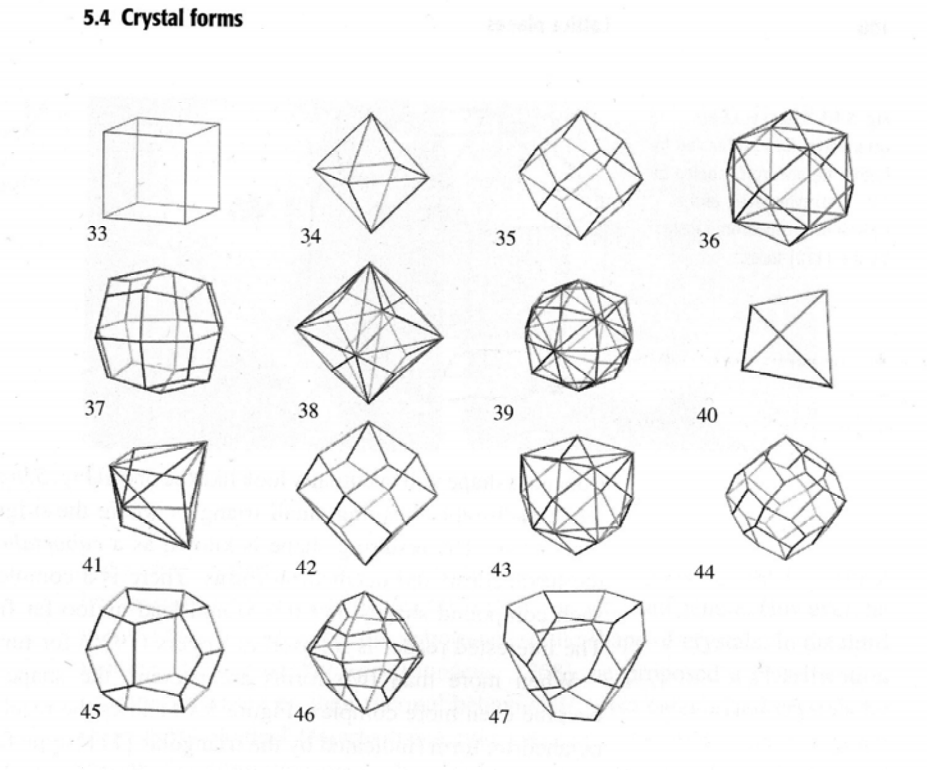
Produce accurately drawn and physically and / or digitally modelled descriptions of the unique habits or formal behaviours of your crystal specimen.

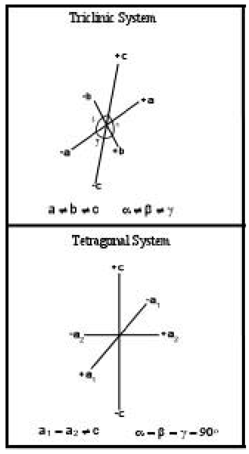
You will have to devise ways of systematically measuring, drawing and modelling your specimen. Build up a vocabulary that names and describes the habits (i.e. tree-like, needle-like, bladed, lenticular, correl-like, branched, layered, twinned, packed, di- or polymorph) - as well as clarifying the base shapes involved (i.e. pyramids, prisms, polyhedra) etc. Analyse the geometric operations involved in its growth, its regularity or order and where that breaks down.

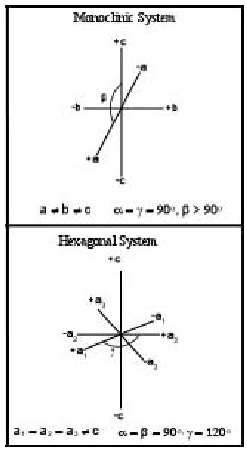


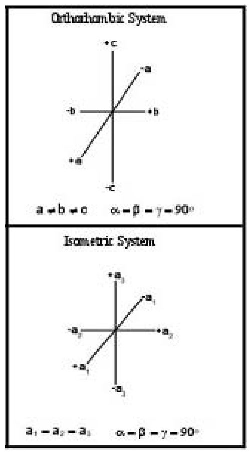












B. Ideal

Whereas habits reflect the actual unique formation of crystalline matter, crystal geometry is based on an ideal or fictional context.

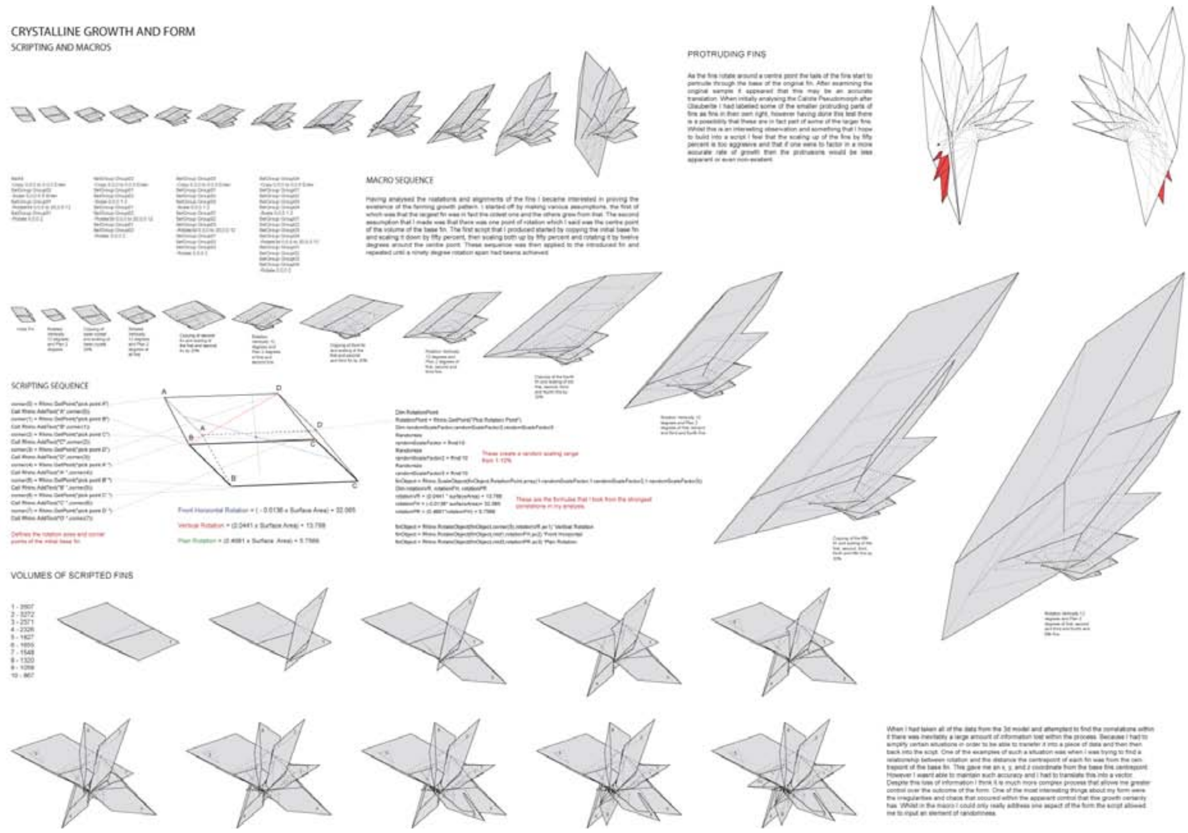
This strand of the work looks at the extraction of a rule-based geometric system within an abstract environment.

Task: Rule-based System

Classify your crystal system.

Through a series of drawings and models, identify and speculate on the particular order your system displays by relating it to the internal atomic structure of your specimen.

This second series of drawings and models should speculate on the underlying logic present in your system and examine its geometric operations, i.e. symmetry operations, angles correspondences, scalar relationships, groupings of planes, axis or points and other identifiable geometric features. The aim is to arrive at a rule based system - a type of crystalline script.



C. Transformations:

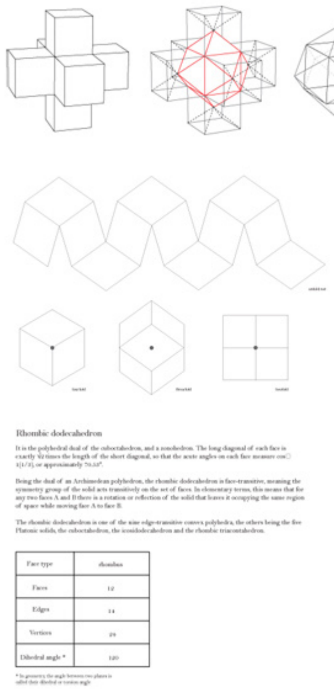
Building on the research that you have done so far, you are asked to subject your geometric system to a number of inputs in order to produce serial transformations.

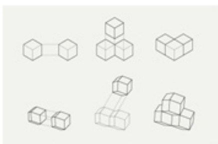
Once you have developed the underlying logic of your system as a series of geometric rule-based operations, you can always re-run these operations varying the rules. Only vary one rule at the time and observe the outcome. Go through “n” number of iterations rigorously, producing variations within your chosen method, documenting the relationship between the rule changes and changes in the geometric system.

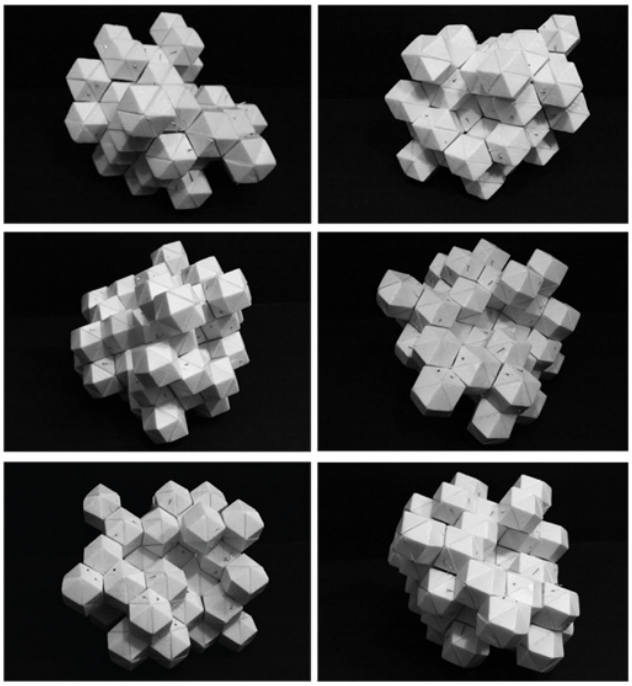
Specifically allow input from the real into the ideal system and vice versa and experiment. The following might be possible:

“After first rejecting the juxtapositional techniques of collage as accumulations of the merely different, we posit either an unchanging unit deployed along a variable trajectory or the single repetition of a variable unit. In both cases transformation is a quality perceived through deployment in quantity.” Reiser & Umemoto, Atlas of novel tectonics.

2. Crystalline Systems and Symmetries







Output:

This exercise is about process. Rather than a final result, you are asked to develop a series of techniques and methods that can inform your design methodologies. The aim is to develop an understanding and control of the 'habitual' logic of these types of systems, build a vocabulary of modes of description or analysis and advance these into generative tools for further use.

- Measuring

In order to produce the drawings and models asked for, you might have to go through other media such as photography, digital modelling etc.
Possible tools might include Camera, Scanner, Caliper, X-Ray, Microscope, Ruler, Point digitiser, Loupe / magnifier

- Drawing

Drawings to be annotated scaled line drawings only.

- Modelling

Modelling in this context is understood as a working method and not a mode of representation. Always work in series, developing a suite of objects that explore a coherently developed logic.

Digital models should not be rendered and maintain an analytical quality.

Physical models should display clear decisions on the technique of modelling, e.g. as a solid model, a surface model or as a type of space frame. This will lead to material choices: non-directional amorphous materials such as foam, resin or plaster for solids, sheet material such as paper, card, acrylic or metal sheets for surface investigations, stick materials such as timber sticks, plastic or metal tubes to look at idealised frame systems.