Department of Earth Sciences
University of Cambridge

PART III EARTH SCIENCES
PROJECT GUIDE 2021-22

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You will need to refer to this manual during all stages of your project, until you submit your report in the Lent Term of your Part III year. **Please read it carefully**. Speak to Alex Copley (Director of Teaching) or Helen Averill (Teaching Support Manager) if you think that the advice contained in this document could be improved for future years.

1 SPECIFICATION AND ASSESSMENT

The following formal specification and assessment criteria give a good guide to the scope and requirements of the Part III project.

1.1 PROJECT SPECIFICATION

1.1.1. The Part III Earth Sciences report is based on an independent project, which may take one of four forms, *not mutually exclusive*:

- A **field project** should have a well-defined scientific goal, rather than be a general mapping project like that in Part II. Examples are a palaeoflow study of a sedimentary unit, the reconstruction of time relationships within an intrusive complex, or the establishment of a deformation chronology in a metamorphic area. Funding for field work is not routinely available from department or college sources, and such projects will only be approved if students can find other sources of funding, for instance through a supervisor's research funds, charitable bodies or their own contribution. All safety arrangements must be made in a similar way to those for the Part II project. If working abroad, a local contact within the host country must be named.
- A **laboratory project** involving collection, analysis and interpretation of geological material or data. These projects will involve new observations on, for instance, palaeontological collections, sedimentological core material, or the geochemistry of a suite of igneous rocks. Such projects are constrained by the availability both of appropriate material and of any necessary instrument time.
- A **computer project** will generally utilise already-collected data, and involve its analysis and interpretation. Examples of such data are geophysical datasets, stratigraphic logs, or structural datasets. The constraints on such projects are the availability of suitable data and of appropriate computing facilities within the Department.
- A **literature review or library project**. This type of project may be a literature review of any geological topic, but will be most suitable if it involves a component of collation and criticism of facts or ideas, or the abstraction and re-analysis of data. Examples are reviews of radiometric ages from an orogenic province, of the classification of a group of fossil organisms, or of the historical evolution of a geological hypothesis.

1.1.2. The project must be given Departmental approval in advance, on the basis of a proposal, written by the student or, more usually, by the project advisor. The proposal should demonstrate not only the scientific value of the project and, crucially, its feasibility with respect to available Departmental resources, but also the arrangements for safety especially if working outside the U.K.

1.1.3. The project is allotted about a third to a half of the study hours in the Michaelmas and Lent Terms, notionally **about 12 hours per week**. However, for most projects it will be beneficial, and for field projects and industry-linked projects essential, to begin during the preceding Long Vacation. Work in Cambridge will usually require some supervision advice, the timing of which will need to be planned to suit each student and advisor.

1.1.4. Each student will be given appropriate guidance on research techniques and strategy by their advisor, enough to ensure that they can competently address the research problems involved in the project. A normal level of supervision is about an hour per week (up to a maximum of 12 hours), but this will vary according to the nature of the project. Students are also encouraged to consult other relevant staff and graduate students. However, the student should be leading the project, and **independently** writing the report. Any data collection, analysis or interpretation done in collaboration must be approved by the project advisor, and be explicitly identified in the final report. Students will be given advice on the structure and format of their project report but should not expect help with its writing, editing or compilation.

1.1.5 Each student must keep field or laboratory notebooks that record, in diary form, the day-by-day progress of the project. These notebooks should accompany the submitted project.

1.1.6. The main text of the report should comprise no more than 7500 words of typescript, in 12 point Times Roman and at 1½ line spacing. This total does not include the abstract (which should be no more than half a page), contents page, appropriate references or figure captions, or necessary appendices containing data. Figure captions should not, however, contain material that properly belongs in the main report text. Citations within the review are included in the word count. They are an integral part of the running text. The word length should be clearly stated at the beginning of the report.

1.1.7. The report should be illustrated with relevant figures and, or, photographs, and, if appropriate, geological maps and sections. Figures should not, however, contain large amounts of text that properly belongs in the main report text. The report should not copy or closely paraphrase other work, whether published or unpublished, without due acknowledgement, as this constitutes plagiarism.

1.1.8 The report should also be accompanied by original notebooks or research diary used in the field, laboratory or library, together with any original maps, sections or other supporting material. Bound into the report should be a copy of the project proposal that specified the aims and objectives of the project when it was initiated.

1.1.9 The report must be accompanied by a digital copy of the report text, appendices, references and figure captions, submitted as a single word or PDF document on CD-ROM or memory stick. The examiners reserve the right to check this material for possible plagiarism using Turnitin.

1.1.10 All material for assessment should comply with the Department of Earth Sciences statement on plagiarism (available in the course guide). Obey the rule that there should be no doubt as to which parts of your work are your own original work and which are the rightful intellectual property of someone else. In particular, data collected by, or jointly with, the research group or another student must be clearly identified.

1.1.11 The report should also include a short (less than one side of A4) self-assessment of the research project. The examiners would like to know your views on the suitability of the topic as a Part III project, the level of training and advice received, the adequacy of departmental resources provided, and any factors that affected – adversely or beneficially – the progress of the research. In some cases, for instance where factors beyond your control have markedly impeded your progress, this assessment might influence the examiners' grading of your work. In any case, your comments will help the Department to optimise the educational value that future students get from their projects.

1.1.12 All submitted material must be, or be folded to, A4 size or less, and securely contained in a folder or box-file. The file must contain the following signed statement: "I declare that the submitted work is my own, except where acknowledgement is given to the work of others or to work done in collaboration. I declare that I have read and understood the Department of Earth Sciences statement on plagiarism and that my work could be tested using automated plagiarism software."

1.1.13 The report must be submitted by **4.00pm** on the **Friday 12 March 2021**. Five per cent of the maximum mark available for the report will be subtracted for each day or part of a day that submission is delayed. In other words, if you are one day late, the mark awarded out of 100 will be scaled by a factor of 0.95 etc.

1.2. ASSESSMENT CRITERIA

1.2.1. The project report will be independently assessed by at least two internal examiners and one external examiner. It counts for 40% of the marks for Part III Earth Sciences. The report is likely to be a focus of the oral examination with the external examiner, and to be particularly influential in decisions about candidates who fall on the borderline of two classes.

1.2.2. In marking reports, the examiners are looking for the following.
Lab/field notebooks, project notes and diary:

- Evidence for methodology and scientific approach.
- Structure and clarity.
- Separation of observations/results from interpretation.
- Critical analysis of approach, methods, results and uncertainties.
- Evidence of problem solving.
- Independence where appropriate.

Final report:

- Logic of interpretation, ability to form a coherent narrative and discussion, ability to construct and present scientific arguments.
- Ability to describe data/observations/results and capacity to make new observations.
- Awareness of current literature and ability to deploy literature material effectively.
- Use of diagrams, photographs and other graphics to support scientific

arguments.

- Overall aims and achievement of the project as described in the report, taking into account difficulty of the project and the extent of help received by the student (by supervisors, staff, RFs/postdocs/PhDs etc.,).
- Style of presentation, editorial control, report structure.

General criteria:

- The intellectual ability to plan and execute a piece of *independent* research work, and in particular to formulate a scientific problem and a program of investigation that will address it.
- The technical skill to make observations competently and safely in the field or the laboratory, or to abstract and collate information from existing documentary sources or databases.
- An ability to interpret observations and results in terms of realistic geological processes.
- An appreciation of previous work in the research area and the critical ability to assess how it compares with the new research.
- The organisational skill and motivation to keep the project on schedule and to deliver the report on time.

1.2.3. The examiners will not be looking for any preconceived 'correct' answer to the chosen geological problem. Rather, they will reward evidence of original innovative analysis or thought, so long as this is rigorously based on the available data and clearly explained in working notebooks and the final report.

1.3 NON-ASSESSED VALUE OF THE PROJECT

The value of your Part III project in terms of examination marks is, as with the Part II project, augmented by other, equally important, benefits:

- The project work gives you important training and experience in geological research. It will allow you to test your own capacity and motivation for possible future research, either in industry or academia. The research skills that you acquire will greatly ease the transition into such research.
- The report will be the main product of your geological work that you can show at interviews for jobs, research posts, or higher degree places. Make an extra copy for this purpose, because the Department will retain your main copy during the Lent and Easter terms of your final year.
- In particular, your report will demonstrate your presentational and organizational skills, equally relevant to jobs outside geology.

2 PROJECT CHOICE AND PLANNING

2.1 CHOOSING A PROJECT

You can choose your preferred project in one of three ways, and you will do this when you are in Part II:

1. *From the lists of departmental projects* issued early in the Lent Term of your Part II year. This list includes descriptions of projects that members of the Earth Sciences staff are keen to supervise. You should pick several projects that interest you and consult the relevant members of staff about the details of each project. You will be asked, by midway through the Lent Term, to list your three preferred projects. Most students can expect then to be allocated to their first-choice project. However, a concentration of interest on projects of one supervisor, or in one area of departmental resources will mean that you may be offered a second- or third-choice topic.
2. *From a list of available industry projects.* The aim is to have this list available early in the Lent Term, along with the departmental projects. Industry partners may want to interview interested students, and either make or influence the final selections. This process occurs in the Lent Term, in parallel with that for internal projects. Competing for, and possibly not being chosen for, an industry project does not affect your chances of being allocated your chosen internal project. Note: Industry projects will not be possible in 2021-22 due to Covid-related restrictions.
3. *By writing your own project proposal for approval.* You are encouraged to develop your own research ideas into a proposal to be considered for departmental approval. However, you will normally need to do this in collaboration with a potential supervisor. The Part III project committee will need to be sure that the project is feasible in terms of departmental resources and staff time as well as in its scientific objectives and strategy. Field projects will often fall into this 'self-proposed' category, and then are subject to much of the logistic and safety advice previously issued for the Part II project.

Part II students wishing to progress to Part III will need to submit project choices on the Part III Project Choice form, to Helen Averill (Teaching Support Manager), in the middle of Lent term. The form can be found on Moodle and further details will be circulated nearer the time.

2.2 FUNDING

It is regretted that there are no funds available from the University for the Part III project. Some Colleges have special funds for which it may be possible to apply.

For *field projects*, an indication of the estimated costs of fieldwork is given. In some cases the advisor may have some funds available, otherwise students will need to raise their own funds. Sources of funding have been listed in the Part II project booklet.

For *laboratory, computer and library projects* and for lab work associated with field

projects, it is envisaged that most of the work will be carried out in Cambridge during the Michaelmas Term. For some projects, it may be advantageous to begin such work in the preceding Long Vacation. Students will then have to negotiate with their College or provide funds themselves to cover the cost of residence in College.

For *industrial partnership projects* it is envisaged that students' expenses will be paid for by the companies concerned.

2.3 ADVANCE PLANNING

You should have a decision on a project, by whichever route, by the end of the Lent Term. You will be allocated a project advisor, if they were not implicit in the original proposal. You should meet with your advisor in the Easter Term and plan out a program of work, particularly if this involves research activity or background reading during the Long Vacation. Industry projects will have an internal supervisor as well as an industry supervisor.

3 PROJECT WORK

3.1 TIMETABLE

The variety of Part III projects makes it impossible to specify a precise timetable. Some general target dates are:

- ***By midway through the Michaelmas Term*** you should usually have completed any fieldwork or industry-based components of your project. Some lab or library work may have been done for other projects, particularly learning relevant computer or analytical techniques. All projects will progress faster during the Michaelmas Term if some background reading and thinking has been done.
- ***By the end of Michaelmas Term*** you should have resolved most of the initial technical problems of your project and be collecting data or within sight of generating some results.
- ***For Lent Term*** you must produce a poster display on your work. By then you need some substantial quantity of data, analysis or results to display, and a realistic assessment of what work remains to be done. Detailed guidance on poster production follows in section 4.
- ***By third week of Lent Term*** a draft report should be submitted to Helen Averill (Teaching Support Manager), electronically by email or via memory stick, or a hard copy if necessary. This draft will be discarded or overwritten when the final report is submitted. Only if illness or technical problems prevent completion of a final version will this draft be used in the examiners' assessment of the project. Throughout the project, all electronic files of the report text and figures must be backed up daily, either to a network server, a CD-ROM or a memory stick. Note: You should have most of the supporting graphics for the report available in at least draft form by now. Guidance on report production follows in section 5.
- ***By 4.00 p.m. on Friday 11 March 2022.*** You must submit your report in both hard copy and also electronically. You are also required to submit your project notebooks in hard copy and a scanned copy electronically. Do not leave its production till the last few days: printers may fail to function well or at all. Always keep back-up copies of computer files and important hard-copy material. Failure to observe these basic rules of research is no defence against late submission.

3.2 MANAGING RESEARCH TIME

The Part III project is an ideal opportunity for you to develop your own ways of planning and executing a research project. Whilst individual styles of research vary, it is helpful to recognise:

- That most research projects have a number of components in common, for instance *data gathering, data analysis, learning of techniques, library work, writing, drafting diagrams, 'housekeeping'.*
- That these components do not necessarily have to be done in sequence, but can be overlapped to make best use of time. In particular, it is usually a mistake not to start writing your report until you feel all your data have been fully analysed. Not until you try to explain your results to others will some of the gaps in your analytical reasoning be revealed.
- That different research tasks require different levels of concentration, allowing

less demanding tasks to be done when you might otherwise feel too tired to make progress. For instance, drafting diagrams typically requires less concentration that writing text.

Do not expect your research, however well planned, to proceed in a straight line towards your final report. Most ultimately successful projects involve a good number of blind alleys, backtracks, and technical hitches. Learn from these rather than become too frustrated by them.

3.3 RESEARCH PRODUCTS

You are asked to submit not only your project report, but also any relevant 'supporting material' that might help the examiners to assess your work. This material does not have to be specially prepared, but rather arises naturally during the execution of your project. Depending on the nature of the research, the material might comprise:

- *A research diary, daybook or log.* You are required to keep such a diary, analogous to the field notebook that you will have kept for a Part II mapping project. It might be a simple catalogue of dates, times and events, but will be more useful if it incorporates some or all of your planning, observations, analysis, interpretation, speculation, literature notes etc.
- *Data records*, which might vary from hand-written notes or drawings, to photographic material, to computer-generated data lists or displays.
- *Analytical material,* for instance computer programs, spreadsheet analyses and charts, graphical or numerical output from analytical software.
- *Library notes*, which might be hand-written notes, or search results and material downloaded from bibliographic sources.
- *Correspondence,* say in connection with a search for data or material, or as a discussion of research results.

In addition to the research material relevant to your project, you are asked to submit a *self-assessment* of your project. The examiners would like to know your views on the suitability of the topic as a Part III project, the level of training and advice received, the adequacy of departmental resources provided, and any factors that affected, adversely or beneficially, the progress of the research. In some cases, for instance where factors beyond your control have markedly impeded your progress, this assessment might influence the examiners' grading of your work. In any case, your comments will help the Department to optimise the educational value that future students get from their projects.

4 POSTER PREPARATION

4.1 REQUIREMENTS

Each Part III Earth Sciences student should, during the early part of the Lent Term:

- Produce a poster summarising progress in the research for their Part III project.
- Display their poster, along with other Part III and MASt posters, for viewing by the rest of the Department.
- Attend the 'poster session', and be available to discuss their poster with Department members.

Discussion at the poster session is intended to be entirely constructive, and to help each student improve the quality of their research work before it is written up as the project report. Neither the poster nor a student's performance at the poster session will be formally assessed. However, students are actively encouraged to approach members of staff, postdocs or PhD students during the poster session and the days surrounding it to discuss their work with them. This is part of 'selling' your research to others and is when most fruitful discussion normally occurs.

Note: The ability to design and produce an effective poster is now an essential research skill, because poster displays are a standard feature of most scientific conferences. The following sections give some general guidelines for successful poster production.

4.2 POSTER FORMAT AND PURPOSE

Each poster should be in the style of a conventional research poster, that is with data, analysis and interpretation represented pictorially and graphically as far as possible. There should be appropriate captions and a short text summary of the research.

Being a research progress report, the poster may contain unfinished analysis or interpretation. A list of work still to be completed will be a helpful feature. The emphasis should be on informative content rather than on sophisticated presentation. In particular, time should only be invested in producing polished computer graphics if this material can be reused or amended for the project report.

It is recommended that the production of the poster should take no more than three or four days, in addition to the time required for ongoing data collection, analysis and interpretation.

Some notes on the poster format and content:

- Your poster must fit on a vertical display board of a specified size. Those in the Earth Sciences department are typical, about 1200 mm wide by 900 mm high, with posters fixed by Velcro tabs on to a fabric surface. This size of display board can accommodate an A0 (1188 × 841 mm) sheet, arranged landscape (shortest dimension vertical)

- For conferences, your poster must be portable: either flexible enough to be rolled (now the norm), or small enough to carry and maybe pack in luggage. Rigid A1 boards are unwieldy, and usually need cutting into halves (A2) or quarters (A3): this has practical design implications.
- The poster should have all the necessary text and graphics to make it self-explanatory. However, it should also be suitable for use at a formal 'poster session' where you might either have to summarise or field questions about your research in front of your poster.
- Your poster should offer something to two contrasting types of user: the 'browser', who may only give your work a brief look from a distance, and the 'ingestor' who pours in detail over every word and picture. Browsers need at least to see a clear title and one graphic that encapsulates the work and may attract them to look in more detail.
- Regard your poster as an advertisement for you and your work. A successful poster relies as much on effective design as it does on good science. Be proactive in asking people to come and look at your post and to discuss the science with you.

4.3 THE COMPONENTS OF A POSTER

Your poster will comprise some or all of the following design components:

- The *heading* comprises a title for the research, together with your name and affiliation. These items should be in a large enough font to be read at a distance of a couple of metres – at least 72 points (about 1"or 2.5 cm) for the title and 36 points for your name.
- Your *contact details* should be included on a conference poster: a postal and Email address at least. This should be prominent, but in a smaller font than the heading. You can include your photograph to help people seek you out at a large conference.
- *Graphics* are the essential ingredient of any effective poster. They may comprise maps, charts, graphs, line drawings, photos, or any other relevant two-dimensional format. If possible, most graphics should be understandable without recourse to a detailed text caption. If possible, at least one graphic should be particularly eye-catching. Appropriate use of colour is essential.
- *Captions* are usually necessary adjacent to each graphic, to amplify its content for the detailed reader. However, captions should still be easily visible: use at least a 14 or 16 point font size.
- The *text summary* or *abstract* of the research has the same purpose as the abstract of a scientific paper, summarising the main results succinctly enough to be read in a minute or two. This is the first and maybe the only component that browsers will read after they have been attracted by your title and graphics. The body text should be at least 16 or 18 point, with a larger or bolder title.
- The *body text* of the poster will describe methodology, data, results and interpretation. It should never dominate a poster – no more than a third of the poster should be text. The text should guide the reader logically through the graphics. The text is more digestible if it is split into logical sections interspersed with the graphics, rather than presented in one chunk. Use at least a 16 or 18 point font.

4.4 PLANNING THE POSTER

- Decide the overall logic of the poster. Most posters have *sequential* sections, for instance aims > methodology > results > interpretation. However, other logical arrangements can be successful. A *radial* structure might have a hub comprising a text and graphic summary, surrounded by the discrete components of the project. Parenthetic *boxes* of text and graphics can amplify peripheral points in either a sequential or radial structure.
- List the graphics that you will need for the chosen structure. Do this *before* you write any text. You will then be forced to see the poster in the same way as the browsers who comprise the majority of your audience. You will almost certainly discover the need for a number of *interpretative or schematic graphics* (‘*schematics’*) to link and summarise the data and results that you already have available.
- Make preliminary pencil-and-paper sketches to explore how your graphics might fit your proposed poster layout. Allow some space for text at this stage.
- Make a physical or digital mock-up of the poster. Rearrange components until you have a satisfactory layout.

4.5 TECHNICAL ADVICE FOR SUCCESSFUL POSTER PRINTING

- Prepare the poster in a drawing programme (such as Inkscape or Illustrator), a DTP programme (such as Scribus) or a presentation programme (such as MS PowerPoint). CorelDraw files give more problems at the print stage, and you use this program at your own risk.
- When you print, keep the size of your print file to a minimum by:
  - Using a plain background rather than a complex graphics background.
  - Reducing the resolution of any bitmap graphics file to a maximum of 300dpi.
  - Importing images/graphics from .jpeg files rather than from .tiff files.
  - Using fonts from the standard font sets.
- Create a PDF file first. On most department printers, you should do Print then choose the pdf ‘printer’ such as CutePDF. Then print the PDF file from a PDF reader, such as Adobe Acrobat. If this is problematic, print directly from the programme of your choice.
- Proof your map/poster on an A4 printer, before any attempt to print it to the A0 plotter.
- Printing is usually available in the Galson lab at a cost of £3 per poster. However due to current department restrictions, this facility may not be available. Further information on printing facilities will be provided nearer the time.

4.6 DESIGN HINTS

- Use a limited range of fonts and sizes. Two fonts, one for headings and one for blocks of text, are adequate. Use bold or italic versions of the same font in preference to a new font.
- Continuous text or figure captions can be read more rapidly in a *serif* font such as Times New Roman or Garamond. Headings have more impact in a *sans serif* font such as Arial, suitably emboldened. More informal fonts such as Comic Sans can be effective for text, but don’t pick an illegible font.

- Use clear numbering or arrows to guide the viewer logically through a sequential poster.
- Use some colour on graphs, maps and other line drawings. Even limited use of highlighting to emphasise key information makes a poster more lively and informative.
- The fashion for putting an outline box around every graphic, caption or block of text can look excessively busy. Boxes are better used to group related elements of the poster, such as data, methodology or results. Avoid the confusion of nested boxes-within-boxes.
- Avoid using an image as wallpaper behind the poster elements. Such wallpaper can be more distracting than appealing, and can hugely increase the size of the poster file. If in doubt, a plain white or pastel background is usually elegant and effective.
- Don't fill every square centimetre of the poster board. Use *'white space'* as a design element in its own right, to separate components and logical sections.

In summary, aim for simplicity not complexity, use graphics in preference to words, and remember that good content and design will always be more effective than sophisticated production techniques alone.

5 REPORT PRODUCTION

5.1 GENERAL GUIDELINES

Your Part II project provided valuable experience of producing a geological report. Some of the advice given in the Part II Project Guide is equally relevant to the Part III project, and will not be repeated here. The Part III projects are, however, more variable in their scope, and the following general guidelines should be followed:

- Write for a target readership of geologists in the world outside Cambridge, just as you would for a paper in a scientific journal. Do not assume that the reader knows you or how your project was designed or executed. Your internal examiners may know some of this but your external examiner certainly will not.
- Write in a 'scientific' rather than a colloquial style throughout. Use published papers as your benchmark.

5.2 CONTENTS OF THE REPORT

Typical contents of a Part III report follow. Adapt this list to your needs, but heed the comments in each section before omitting it in your own report.

- *Title:* should accurately describe the content, but be kept short (less than 12 words?).
- *Abstract:* should summarise the essence of your research, in less than about half a page. Emphasise specific objectives and findings rather than giving a bland report of what was done.
- *Introduction:* should include a statement of the research problem, together with your objectives and research strategy. Make quite clear *why* you have done this research.
- *Literature review:* should be succinct, but adequate to put the project research in the context of previous work in the field.
- *Methods:* should cover the means of data acquisition and analysis. Refer to previously published details of methodology rather than repeat these details, unless you have developed innovative methods yourself.
- *Results:* will be the core of the report, and may expand to several chapters. The results sections are not simply data-dumps: they must be carefully structured to develop your hypotheses for the reader. Analyse here or in the methods section the errors in your results, identifying their source and how large they might be.
- *Discussion:* places your results in a wider context of related work.
- *Conclusion:* is more than a restatement of results, but less than a summary of the discussion.
- *Acknowledgements:* should recognise scientific, technical, logistic and financial help. Do not be over-effusive or frivolous.
- *References cited:* follow a consistent bibliographic convention (see section 5.5) in listing all the references that you have cited in the text.
- *Appendices:* must include a copy of the project proposal that specified the aims and objectives of the project when it was initiated. Other peripheral material can also go here: data tables, specimen lists, program listings etc.

5.3 TEXT STYLE

Some pointers to achieving a good text style are:

- Write in short, simple sentences, one main point per sentence.
- Try to write as you would speak, using direct clear language.
- Don't use a long word when a short one will do.
- Use active rather than passive phrasing wherever possible: use "faults dominate the eastern part of the section" rather than "the eastern part of the section is dominated by faults."
- Don't turn verbs into nouns: use "each bed grades up from sand to silt" rather than "each bed shows an upward gradation from sand to silt."
- Don't string too many nouns together: use "the flows breached the left levee of the mid-fan channel" rather than "the flows breached the left mid-fan channel levee."
- Avoid jargon, slang and colloquialisms. Generally, avoid writing in the first person.
- Don't over-use acronyms. Define ones that you do use.
- Put signposts in an argument, showing where you have come from and where you are going.

5.4 FIGURE STYLE

The appropriate figures and photos for your report will depend strongly on the nature of the research topic. The figures should be relevant and clear. There is no requirement for them to be drafted using a computer drawing package: neat hand-drawn and lettered figures are also acceptable. Some guidelines for good figures are:

- Keep figures simple rather than cluttered.
- If possible, design figures so that they are set 'portrait' on the page rather than 'landscape' (i.e. turned on their side).
- Use a simple sans-serif font such as Helvetica, Ariel, Futura, Univers. Use different sizes of the same font, or bold or italic version, rather than a variety of different fonts.
- Lettering size should be such that capitals are at least 2mm high. This is no less than 6pt Ariel font. 8pt is a better size for most lettering.
- Use several line widths, if appropriate, to add contrast to the line-work.
- Avoid very bold ornament. Also avoid using tones that are too fine or too similar: they will not copy well.

5.5 CITATION AND REFERENCE STYLE

Citations in the text should be in one of two basic styles; either "the concept of systems tracts was discussed by Emery and Myers (1996)" or "this turbidite fan constitutes a lowstand systems tract (Emery & Myers 1996)". References cited should be listed in alphabetical order of first author, and presented in a consistent style. There are numerous such styles. If in doubt follow the examples below of a book, a chapter in an edited book, and a journal article.

Emery, D. & Myers, K. (eds) 1996. *Sequence Stratigraphy.* Blackwell Science, Oxford.
Warr, L. N. 2000. The Variscan Orogeny: the welding of Pangaea. *In:* Woodcock, N. H. & Strachan, R. A. (eds) *Geological history of Britain and Ireland*. Blackwell Science, Oxford, 271-

294.
Murphy, J. B. & Keppie, J. D. 2005. The Acadian Orogeny in the Northern Appalachians. *International Geology Review,* **47**, 663-687.