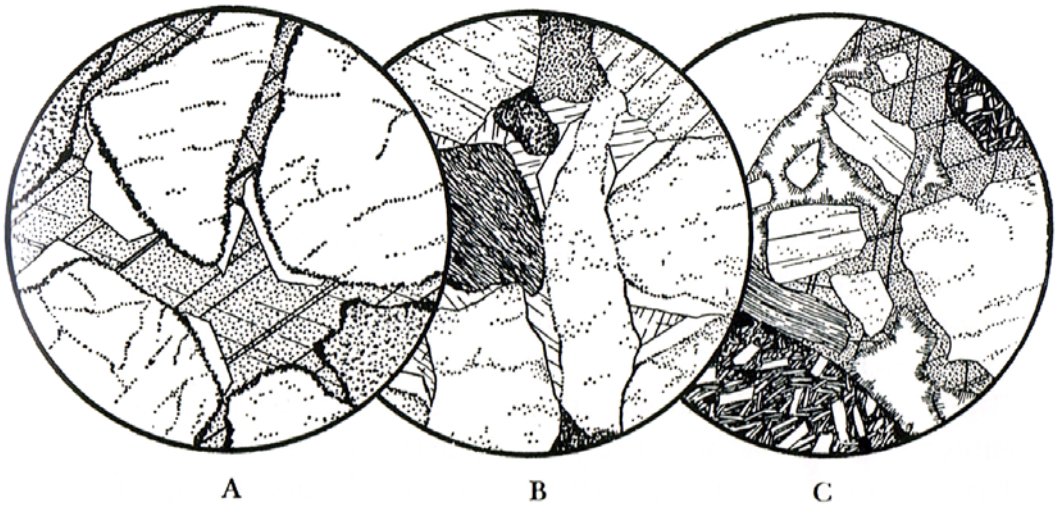
Thin-section 3

GY 402 Sedimentary Petrology (2017)

Siliciclastic Diagenesis



Cements in sandstone (in thin section) Field of view for each approximately 1.5 mm.
From Williams, H., Turner, F.J and Gilbert, C.M., 1954. Petrography. W.H. Freeman & Co., 406pp.

Introduction: Diagenesis is any change to a sediment (or sedimentary rock) from the time of deposition through to the onset of metamorphism. At that time (metamorphism), they become someone else's problem (enter Dr. Allison). Today you get your first chance to really consider those intergranular areas in your thin sections; most of it is cement and that makes it a diagenesis issue.

Lab exercise (do in your note books, not re-doable): Go back to your two previous labs on siliciclastic sedimentary rocks (mature and immature rocks). Look at one thin section from each lab and fill in the missing data for Part II (Intergranular materials). Report the type and percentage of each of the cements that you have in each of those two thin sections. From this point on, you will deal with grains and cements at the same time using the example format I gave you a couple of weeks ago (attached to the Mature sediments lab). I suggest that you do additional diagrams to illustrate the cement fabrics (best in your discussion section). As always, take your time. Each thin section report should take at least another 30 minutes of new observation time.

Discussion Question (re-doable): In a separate paragraph at the end of your thin section report, discuss in ½ to one page (handwritten = 100-300 words preferably with a separate diagram/sketch) the type and origin of the cement(s) in **any one** of your mature or immature siliciclastic thin sections. By origin I mean what were the chemical processes responsible for cementation. I expect you to do some research on this question. For example, how is "quartz" transported in solution into pore space and how and why does it get precipitated? Provide a reference citation where necessary. This discussion question is re-doable for revised credit.

Due Date: I expect 2 revised thin section reports in your notebooks and a separate discussion page by the deadline specified on the website and the class calendar.