Voorschoten, March 29 1967
Palestinalaan 11

Dear Grothendieck,

Enclosed I send you – finally – , in two different covers, the manuscript on the fund. group together with the papers which I borrowed from you.

As to the terminology: I have used scheme instead of prescheme (without mentioning it, because I expect this will be a general remark in SGA I) but I have not used "doublet" because I don't know your final decision on this point.

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References: I have made freely references to EGA (also to EGA IV) but only to SGA 1960/61 (with one notable misleading : a reference to SGA X , Cor 3.3 etc, the purity theorem, is a misleading because the proof is only in SGA 1962). I don't know the "new numbering" of SGA (you mentioned something about it, but I don't remember) so I have used still SGA I, SGA V etc for the 1960/61 seminaire.

SGA 1

I must admit that there are still many points which are not satisfactory in the exposition. Below are some comments, motivations and questions:

p.3 Hyp.1 Perhaps it would have been nicer to avoid a little longer this assumption. However there is in SGA 1960/61 only a statement about quotients and existence of quotients in case the group is an *ordinary* finite group (it is only in SGA D that the theorems from TDTE III are proved and the proof is long and subtle!) This is the reason for making the assumption Hyp.1 already here.

p.5 line 6 below: The emphasis on H ordinary group .. same reason

p.6 (Cor 1.11) In fact this is a general question : I have hesitated a little bit with the word "covering" for "revêtement" (of course: already used in the title!) Originally revêtement was used as translation ~~for covering~~ (in Serre-Lang's paper) for covering (in Lang's papers)! But now there may be confusion with "covering in some topology" for instance "covering in the étale topology" which is something entirely different. What do you think about this? I don't see what

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Word to use else.

! **p.19 etc** : I expected lemma 4.3 to be almost trivial but when I tried to write a proof I did not see an easier one?. Also : the proof of lemma 4.4 is kind of subtle (but this could be expected).

p.26. line 1 : I shall try to find a precise reference.

line 3 : the condition : irreducible in <u>Zariski topology</u> is unpleasant but I have not been able to avoid it.

last line in 3) : it seems necessary to mention also the points s'.

p. 33, 34 etc .. I did not see an easier proof for prop 7.4

p.43 theo. 9.4 You have mentioned that the theorem in this form is not satisfactory. For instance the trivial case with constant fibres and arbitrary crossings escapes. However I don't see how to get a satisfactory statement.

p.45. line 5 etc. Is this indication sufficient?

I have not written an appendix on the Lefschetz theory. If you think this is useful then I can still try.

It is not necessary to return the manuscript, I have a carbon copy so you can refer to pages and number in your comments. Please give me, if necessary, indications for the way the final manuscript must be typed (is the book a photo copy of the manuscript?) Also give me a deadline when you must have the manuscript because I am afraid that I may have already delayed the publication date of your first volume.

With best regards,

Sincerely yours,

J.P. Murre

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