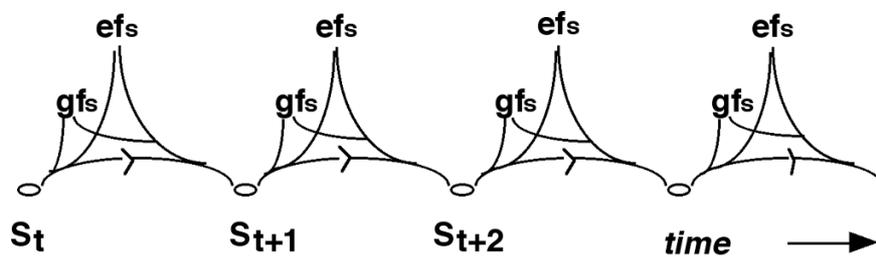
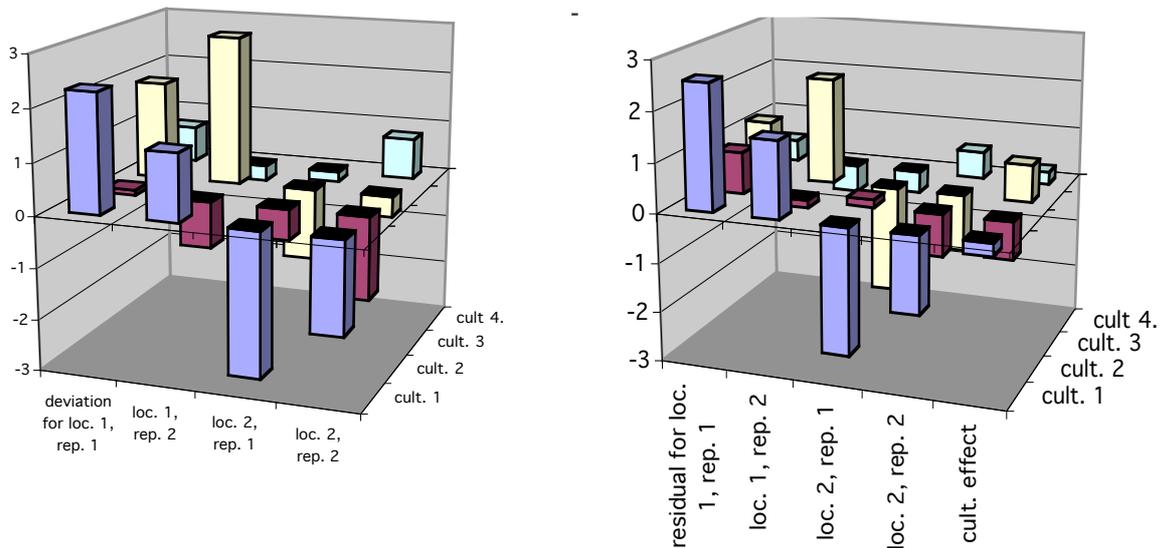


## Online Appendix 2: Additional Figures



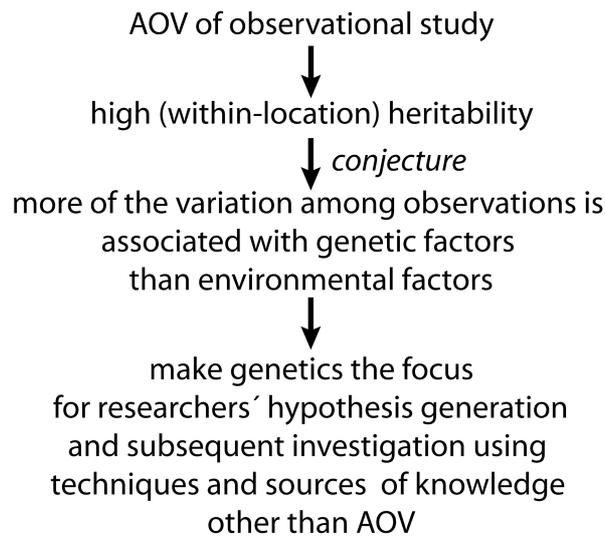
**Figure 1.**

Schematic depiction of the process of development from time  $t$  to  $t+1$ , etc. of the state of an organism ( $S_t$ ) as it relates to some specific traits. The state of organism at time  $t$  induces action by genetic factors (gfs) and environmental factors (efs). gfs and efs modulate the effect of each other on state of organism at time  $t+1$ , and so on. The nature of the genetic factors and environmental factors that are implicated in this process changes as the organism develops from a single cell to maturity.



**Figure 2.**

a. Deviation from the overall mean yield of the yield of cultivar  $i$  grown in replicate  $k$  in location  $j$  for Data set 1, consisting of four cultivars grown in two replicates for each of two locations (numerical values given in online Appendix 1). b. Deviation subdivided into a cultivar effect (5th series, on the right) and residuals (the other four series).



**Figure 3.** Conjecture about heritability and the relative contribution of genetic vs. environmental factors.

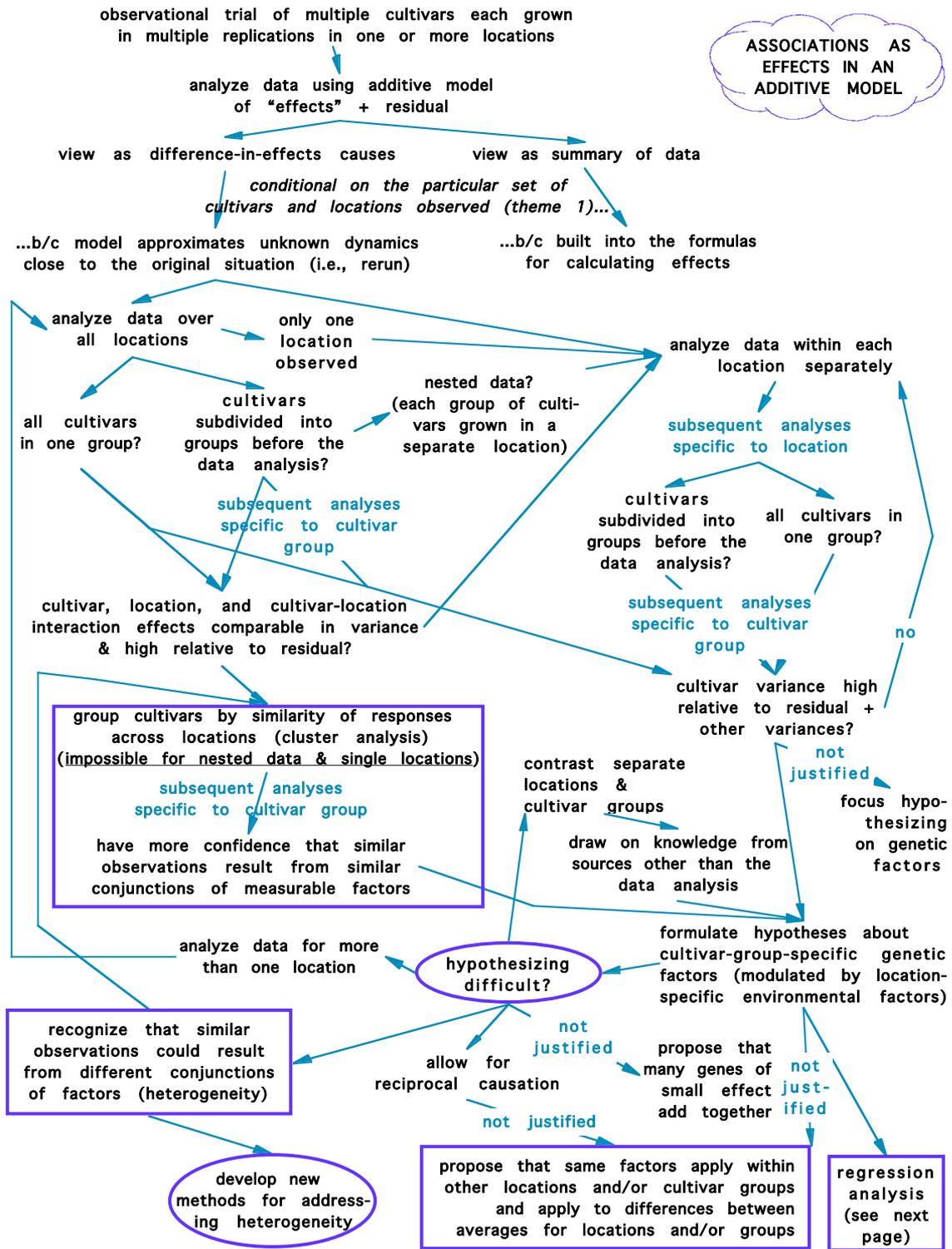
One site = one location—cultivars 1-4 are replicated in plots randomly distributed within one site

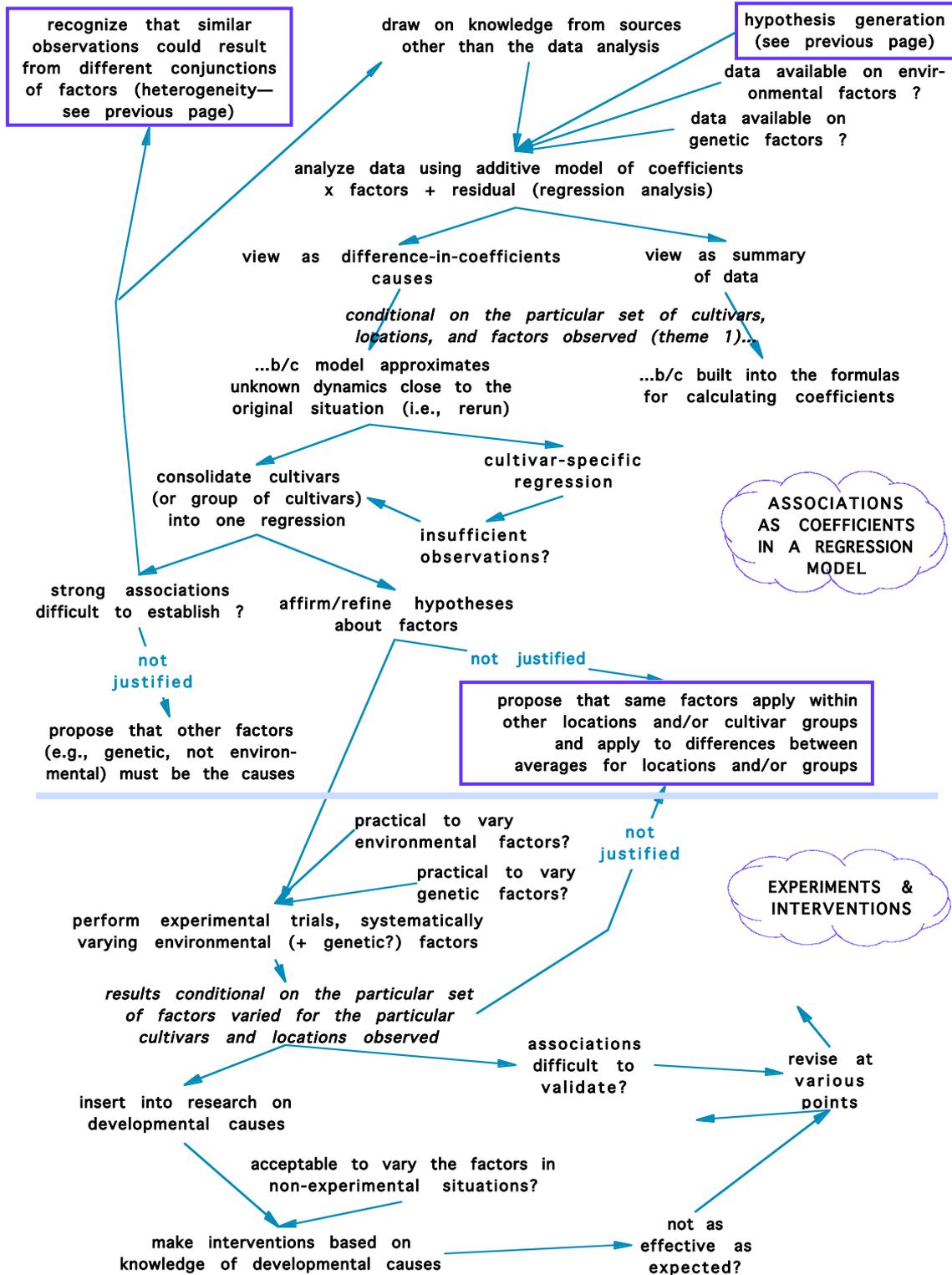
1	4	2	2
3	2	2	3
4	4	1	1
3	1	4	3

The site should be analyzed as two locations—cultivars 1 & 2 are randomly distributed but only within plots on the left side of the bar; conversely for cultivars 3 & 4

2	1	4	4
1	2	4	3
1	1	4	3
2	2	3	3

**Figure 4.** One site as one or more locations.





**Figure 5.**

Diagram summarizing the conceptual steps and branches in the analysis of associations as effects in additive models and in regression analysis, experimental trials, and interventions involving associations of traits with measurable factors.