

NON SUA POMA: VARRO, VIRGIL, AND GRAFTING

DAVID O. ROSS, JR.

In this note I propose an emendation in Varro's *De Re Rustica*, which raises a discussion of Virgil's lines on grafting in the *Georgics*, which in turn leads to a possible confirmation of the dating of Eclogue 8 to 35 B.C.

Varro, introducing grafting (his *quartum genus seminis*), says that attention must be given (*videndum*) to what tree is grafted onto what, when, and how; he then illustrates (RR 1.40.5):

non enim pirum recipit quercus: neque enim si
malus pirum.

So Keil's text, with no indication of doubt or difficulty in his *apparatus criticus*. In his commentary, however, he cites Ursinus' punctuation and alteration¹) and then notes, "de brevitare dicendi *neque enim si malus pirum*, h.e. 'neque enim si malus pirum recipit, pirum recipit quercus', dubitari non debebat." Keil's confidence has since been shared by all -- e.g., the Loeb translators, "You cannot, for instance, graft a pear on an oak, even though you can on an apple."

The words as they stand, however, cannot give the sense so desired by Keil and others: the second negative (*neque*) must either be disregarded entirely or (as in Keil's paraphrase) be made to introduce a remarkably pointless ellipsis;

1) Ursinus: ...*quercus. neque enim si malum pirum, hoc sequendum [secuntur MSS]. multi aruspices audiunt [multum], a quibus...* Cf. Pontedera's revision (reported by G. Pagani, *M. Terenzio Varrone: Dell'Agricoltura* [Venice 1846], 865-6), *Non enim pirum recipit quercus; neque etiam si malus pirum, hoc sequuntur multi qui aruspices audiunt multum, a quibus proditum...*

and the second *enim* is clearly intrusive (the first serves to introduce Varro's illustration, the second serves no purpose at all). Furthermore, the meaning forced upon the words (that an apple will take the graft of a pear) seems to me undesirable: in the discussion immediately following, Varro in fact speaks of the graft of a cultivated pear onto a wild pear and then explicitly says that both scion and stock should be of the same *genus*, as for instance apple (*in quamcumque arborem inseras, si eiusdem generis est, dumtaxat ut sit utraque malus, ita inserere oportet referentem ad fructum...*, 1.40.6).²⁾

I suggest, then, that Varro wrote

non enim pirum recipit quercus, neque etiamsi
malus pirum.

"For example, an oak does not take the graft of a pear, nor, even if (it is) an apple, does it take the graft of a pear."³⁾ Varro illustrates his advice (*videndum qua ex arbore in quam transferatur*) first by the patently absurd (pear and oak), then by what might to the inexperienced seem possible (pear and apple).

The assumption that Varro regarded the graft of pear and apple as possible has undoubtedly been influenced by Virgil, *Geo.* 2.32-4:

et saepe alterius ramos impune videmus
vertere in alterius, mutataeque insita mala
ferre pirum et prunis lapidosa rubescere corna.

These lines conclude the first didactic section of the Book, concerning propagation (cf. Varro, where grafting is the fourth method of propagation), both natural reproduction

2) The term *genus* is regularly used to denote what we would refer to as "genus" or "species" (thus e.g. *genera oleae, brassicae, violae*), but is also used more generally (thus *genera fructuum, pomorum, arborum*): see *ThLL* 6.1895.70-1896.12 (s.v. *genus*). But in this context it seems clear that Varro refers to apple as a *genus* distinct from pear and oak.

3) *Etiam* in Pontedera's emendation (above, n.1): cf. also C. Gesner, "Quid si ellipsis hic esset ita supplenda, *neque enim* hoc procedit, et si *malus pirum* recipiat? Transposita verba nihil haberent difficultatis. *Neque enim si malus pirum* recipit, *etiam pirum recipit quercus*." Both see the difficulty of the second *enim*.

(9-21) and the methods man's experience has devised (22-34). The second didactic section (47-72) is identical in content though different in disposition (the natural and invented are treated together), but concludes like the first with grafting (69-72):

inseritur vero et fetu nucis arbutus horrida,
 et steriles platani malos gessere valentis;
 castaneae fagus⁴⁾ ornusque incanuit albo
 flore piri glandemque sues fregere sub ulmis.

Grafting, by its position in both sections, had for Virgil exemplary importance.

All of the examples of grafting given in both passages (leaving aside for the moment the one that concerns us most, apple and pear) are impossible according to modern theory and practice and were also unknown in antiquity before Virgil. All of Virgil's examples are of grafts between families and are hence most unlikely.

The amateur has real difficulty in sorting out fact and fiction, theory and practice in this area, for both in antiquity and today accepted theory as to what is possible is surprisingly limited and often vague, while practice is either confined to the practical or is wildly experimental and dubious. The last word on the subject of ancient grafting was written, very fortunately, by A.S. Pease, no botanical amateur.⁵⁾ Modern theory can be stated thus: grafting between families is just about impossible, between genera (intergeneric) possible though difficult and often unsuccessful, and between species (intrageneric) generally success-

4) My punctuation and text differs here from Mynors' OCT (...valentis, / castaneae fagos;...). It is simpler to assume metrical lengthening at the caesura than the unusual Greek nominative *fagos* (see Richter *ad loc.*); I wonder too whether an accusative *fagos* is unnatural with the verb *gessere* (as it might be too with the verb *ferre* in 34), because the grafted tree "bears" the fruit of flowers of the graft -- that is, would Virgil say "chestnut trees bear beech trees"?

5) "Notes on Ancient Grafting," *TAPA* 64 (1933), 66-76: I owe this reference, unknown to Virgilian commentators and others, to Prof. Roger Pack.

ful.⁶⁾

Properly, though, the question is whether Virgil thought such grafts (as apple onto plane) possible -- what was the theory and practice in antiquity? Pliny (*NH* 17.120), for instance, claims to have seen (*vidimus*) a tree at Tivoli bearing every sort of fruit, wallnuts on one branch, "berries" on another, on others grapes, pears, figs, pomegranates, and apples; *sed* (he adds) *huic brevis fuit vita*. Such marvels of ancient grafting, not uncommonly reported,⁷⁾ are misleading or deceptive: Pease reaches two conclusions which need to be underlined.

First, there are various explanations for such marvels, some of which might actually have been observed, and various reasons why they are not in any sense true grafts. Pliny's short-lived tree, I suspect, was perhaps simply decked out for some occasion, perhaps a visit by the local garden club. Others, according to Pease, may have been instances of "space parasitism," which in fact Pliny recognizes as the origin of the art of grafting (17.99), as when a seed happens to be deposited in a fork or crevice in the bark of another tree, "from whence," Pliny says, "we see (*vidimus*) a cherry on a willow, a plane on a laurel, a laurel on a cherry." Others may have been the products of "grafting by ap-

6) Pease, p. 66 n.1, with indications of just how tentative even such a general statement must be. L.P. Wilkinson is one of the few who have inquired into this matter; he quotes Mr. J.S.L. Gilmour, Director of the Cambridge University Botanic Garden, "There is no doubt, I think, that Virgil is mistaken in all the cases he cites. I know of no successful grafts between members of different families, and all his pairs are allegedly grafts of this type. There are, indeed, very few cases of successful grafts even between two different genera of the same family, far less between genera of different families" (*The Georgics of Virgil* [Cambridge 1969], 244 n.). I would similarly like to thank Prof. Harold Davidson, Dept. of Horticulture, Michigan State University, for his ready help on several occasions.

Much remains doubtful (it seems to me) because (1) the mechanics of compatibility are still not sufficiently understood by botanists, (2) compatibility does not depend entirely on generic relationship, and (3) there can be no agreement as to what constitutes a successful graft in practice (some grafts may be "successful" for only a relatively short time, and in others, Prof. Davidson informs me, there may be a decline after as much as 10 years).

7) See Pease's collection of sources, pp. 67-71.

proach," a method developed probably fairly late and particularly championed by Columella,⁸⁾ by which a branch from one growing tree is joined, without being separated for at least three years, to another, and so in fact continues to grow from its original stock. Finally, to quote Pease, "those [examples] still remaining may well be due to mistaken analogies and enthusiastic exaggerations of amateurs, whether poets or prose writers." (One should note here Pease's designation "amateurs".)

Pease's second conclusion is, for our purposes, even more important: "...[we] should probably consider either the [pseudo-Aristotelian] *de Plantis* or Virgil's *Georgics* as containing the earliest certain reference to intergeneric grafting."⁹⁾ That is, before Virgil there is no mention of grafting between different families, no mention of the wonderful products of intergeneric grafting related enthusiastically from Pliny to Palladius. When one looks at earlier writers on grafting, or for that matter at Columella, one is struck by the sober reality of practical horticulture, not the speculations of amateurs. Virgil may well have been largely responsible for the later claims of grafts now recognized as impossible.

We can be certain, though, that Virgil knew he was presenting the impossible and expected to be convicted of falsehood. After the second set of examples (*Geo.* 2.69-72) Virgil

8) Pliny, *NH* 17.137, *est etiam num nova inserendi ratio...Columellae excogitata, ut adfirmat ipse...* : cf. Col. 5.11.12-15, where there is no such affirmation. See K.D. White, *Roman Farming* (Ithaca 1970), 257, on this passage and on the "absurd instances of incompatible grafting" in Pliny. It does not seem to have been observed that grafting by approach ("Columella's" *nova inserendi ratio*) is in fact described by Varro, 1.40.6.

9) P. 71. The difference between practical horticulture and amateur experimentation needs to be kept in mind. Grafting is in fact a type of propagation, yielding mature fruit of the grafted variety far more easily and quickly than reproduction by seedlings (which may revert from the cultivated variety to the wild type) or cuttings. New varieties too may be produced by grafting. (See K.D. White, *Roman Farming*, 248, with table of varieties p. 262.) The practical fruit-grower would have no reason to graft apple onto pear, much less onto oak, even if it was (or is) theoretically possible or even on rare occasions successful.

has a short passage on the different methods of grafting, concluding this with the tree wondering at fruit not its own (80-2):

nec longum tempus, et ingens
exiit ad caelum ramis felicibus arbos,
miratastque novas frondes et non sua poma.

Virgil's language allows us to read this as a less than happy innovation. *Ingens* is an adjective of epic diction, to which Virgil contributed the meaning "native" or "natural."¹⁰) Certainly *miratast* and *novas* can connote horror, rather than a happy gaze, at its strange and unnatural, rather than novel, foliage. *Non sua poma*: violation of the natural (suggestions of violence, as so often, are clear in the language of these passages) results in distortion. Servius (on line 82) is precise and far more valuable than any modern commentator: "ingens phantasia."

The implications of these observations must await a larger context, but a few conclusions can be outlined in anticipation. Virgil knew full well that his examples of grafts were neither practiced by horticulturalists nor discussed in agricultural literature; he intended all to be recognized as impossibilities. Grafts and grafting are exemplary in the first didactic sections of Book II because they clearly illustrate the farmer's violence and subsequent distortion of the natural,¹¹) to the extent that the impossible and unnatural is brought about -- as a poetic fiction, of course. Furthermore, and most important, Virgil's examples are in fact *adynata* of a type somewhat rare in poetry (botanical impossibilities -- to be discussed shortly), and as

10) See the important note by J.W. Mackail, "Virgil's Use of the Word *Ingens*," CR 26 (1912) 251-5; in his category "'Engendered,' sometimes tending to pass into the sense of 'native' or 'natural,'" occur this and frequent other examples such as 2.65 *ingens fraxinus*, "the native ash;" 2.131 *ipsa ingens arbos*, which he calls "perplexing" but which clearly means the "native" tree of Media; 4.20 *ingens oleaster*, "a natural wild olive, with implied antithesis to the exotic palm with which it is coupled."

11) Cf., again, in the first section, lines 9-21 (*natura* in 9 and 20) with lines 22-34 (*usus* in 22).

such serve the same purpose as all *adynata*, to show a world inverted and out of joint (and hence the conclusion, the tree with fruit not its own): it is characteristic of Virgil in the *Georgics* to turn an artificial and poetic *topos* into a reality.

Virgil's grafting thus supports the understanding and emendation of Varro presented at the beginning. Though it is not impossible that apple and pear can be grafted with at least temporary success,¹²⁾ Virgil would hardly have included what he considered a possible graft among six others clearly impossible; and since he had the text of Varro at hand, we can feel further confidence as to what that text said.¹³⁾

One final point remains. In Eclogue 8 Damon, just before announcing his suicide, concludes his song with a series of *adynata*:

nunc et ovis ultro fugiat lupus, aurea durae
mala ferant quercus, narcisso floreat alnus,
pinguia corticibus sudent electra myricae... (52-4)

12) R. Billiard, who knew horticulture, dismisses Virgil's other grafts as "imaginaires," but says of apple and pear, "l'alliance des genres *Pyrus* et *Malus*, tous deux de la famille des Rosacées, et si voisins que Linné n'en avait fait qu'un, le genre *Pyrus*, n'est peut-être pas impossible; en tous cas, je ne crois pas qu'on l'ait jamais réalisée" (*L'Agriculture dans l'Antiquité* [Paris 1928], 154). Prof. Davidson (above, n.6) kindly wrote me, "I would suspect that there would be a high possibility of success with apple on pear since this is grafting a pome fruit onto a pome fruit and you are within the Rosaceae family... However, in the family Rosaceae there are quite a few different degrees of graft success between genera." The generic relationship of *Malus* and *Pyrus* has been the subject of constant and continuing revision, so that Pease's statement (p. 66) that grafting is limited in modern practice to trees of the same species or "of the same genus (for example, pear and apple, both species of the genus *Pyrus*)" appears to be questionable. (Pease, I must add, translates (p. 67) Varro's sentence "For the oak does not admit [a graft of] the pear, even though the apple does admit the pear" and gives no indication of hesitation concerning either the botany or Latinity involved.)

13) B. Weiden has called my attention to Prop. 4.2.17-18, *insitor hic soluit pomosa vota corona, / cum pirus invito stipite mala tulit*, a couplet characteristic of Propertius: he is aware of the significance of the apple/pear graft, has called attention to it with the attribute *invito*, but is somewhat late in his reaction.

Oaks bearing apples are an impossibility. These lines are clearly modeled on Daphnis' final words before his suicide in Theocritus (1.132-4), "You brambles and thorns, bear violets; let the beautiful narcissus flower on the juniper, let everything be upside down, let the pine bear pears..."¹⁴ Virgil retains Theocritus' narcissus, though he transfers it to the alder; but for Theocritus' pines bearing pears, he has substituted oaks (*quercus*, metrically equivalent to the *pinus* he might have used) bearing apples. Gow lists instances of "impossibilities illustrated from the vegetable kingdom as here," giving only three other passages besides Virgil's, none of which are significant.¹⁵

Virgil's alteration of his model may have been simply for variation, and oaks and apples may simply have occurred to him for no particular reason, but to me it seems far more likely, because far more characteristic, that he had in mind Varro 1.40.5 (itself, as we have seen, the first instance of the impossible graft of oak and pear).¹⁶ This suggestion of Varro in Eclogue 8 must remain tentative, but it does present a further consideration. Varro wrote his *De Re Rustica* in 37 B.C. (in his eightieth year, as he says in his introduction, 1.1.1).¹⁷ If Virgil read it immediately upon pub-

14) νῦν ἴα μὲν φορέοιτε βᾶτοι, φορέοιτε δ' ἄκανθαί, / ἂ δὲ κατὰ νάρκισσος ἐπ' ἀρκεθῶοισι κομάσαι, / πάντα δ' ἄναλλα γένοιτο, καὶ ἂ πίτυς ὄχνας ἐνεΐκαι...

15) *Commentary*, on line 133: the other three passages are Theognis 536 ("for roses and hyacinths do not grow from the squill"), Theocr. 5.125 ("let reeds bear fruit"), Ovid AA 1.747 ("tamarisks bearing fruit").

16) Neither Daphnis nor Damon, of course, are thinking of grafting. Virgil does have a characteristic variation here: Theocritus has pines bearing pears, Varro denies that an oak or an apple will bear pears, Virgil has oaks bearing apples.

17) The actual date of publication, so crucial here, cannot be precisely determined. 37 B.C., generally given in the handbooks and histories, is only the date of 1.1.1 (the dedication to his wife Fundania), in which Varro says he is in his eightieth year. (Varro's birth is given by Jerome as 116.) When he dedicated Book II to Turranius Niger, he mentioned that he had already written a book for Fundania (2 *Praef.* 6). It is possible then that Book I (the *de agricultura librum* of 2 *Praef.* 6) may have been written and may have circulated prior to 37, in which case its introduction as it now stands may have been written for the publica-

lication, would he have then immediately incorporated a suggestion from it into Damon's *adynata*? Or is it not more likely that the incorporation was made between 37 and 35, when he perhaps had begun to consider the possibility of a poem on farming?¹⁸⁾

University of Michigan

tion of the three books in or after 37; or, if we rely on 1.1.4, *quocirca scribam tibi tres libros...*, with its (though "dramatic"?) future tense, 37 must be the year of the composition of the entire work.

18) For the recent dating of the publication of the *Eclogues* to 35, see G.W. Bowersock, "A Date in the *Eighth Eclogue*," *HSCP* 75 (1971), 73-80; W.V. Clausen, "On the Date of the *First Eclogue*," *HSCP* 76 (1972), 201-5; E.A. Schmidt, *Zur Chronologie der Eklogen Vergils*, Sitzungsber. Heidelberg, Phil.-hist. Kl. 1974, 6.