CHAPTER 3
UNIQUE REPRESENTATION DOMAINS

0. Introduction.

We concluded our previous chapter with the local characterization of Semirigid Domains (cf Th. 2 Ch. 2) which shows that a Semirigid Domain is a generalization of a Krull domain (is a *GKD). The fact that the two generalizations of UFD's we have worked out are also generalizations of Krull domains leads us to think that if there exists yet another generalization R of Krull domains, which is also an HCF domain, then it is possible that the factorization of non zero non units of R should exhibit some interesting pattern. But we have to be selective in choosing a particular generalization of Krull domains for an examination; because arbitrary generalizations of Krull domains can range over an uncontrollably large family of integral domains, which may be irrelevant too. For example an integrally closed domain generalizes a Krull domain in the sense that a Krull domain is integrally closed, but choosing an HCF integrally closed domain is absurd, because an HCF domain is already integrally closed (cf [23] p.33). We did mention at the end of the last chapter that a ring of Krull type satisfies *1,*2 and *4 of Def. 3 , in view of this, a ring of Krull type seems to be very near to the generalizations of Krull domains we could achieve through a generalization of the concept of Unique Factorization.

Thus it looks worth while to consider the factorization of a non zero non unit in an HCF ring of Krull type and to set up a more general theory if some pattern shows up. And our first step towards this end should be to give an