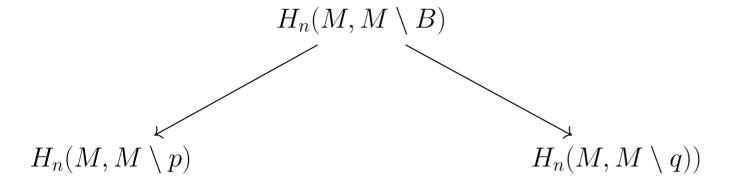
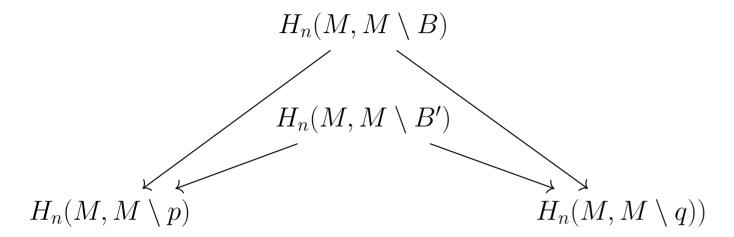
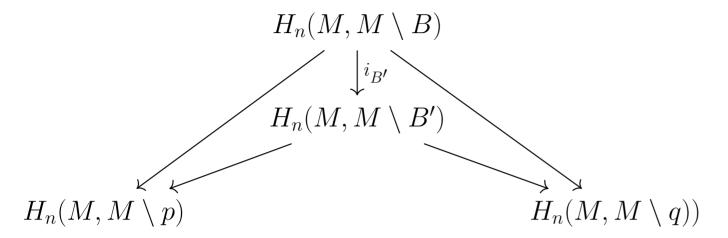
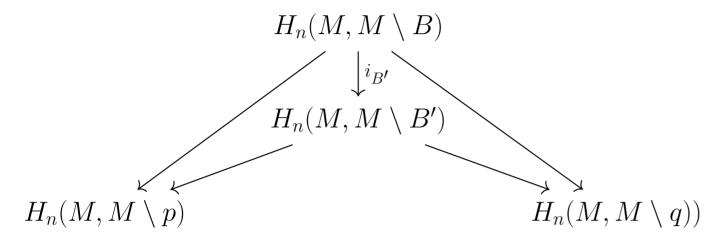
Observation on local consistency:

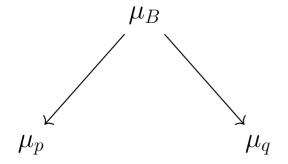


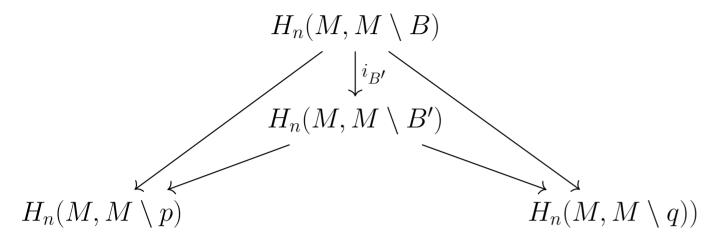




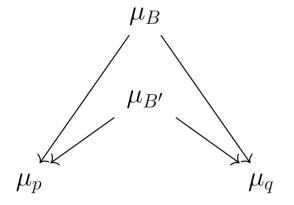


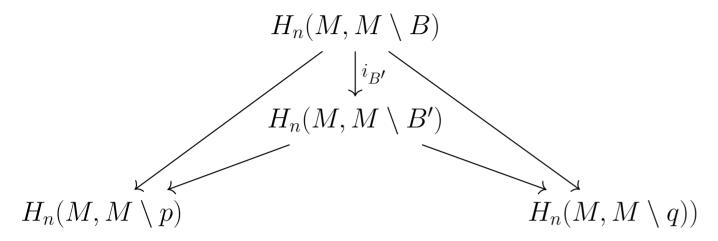
An orientation on M needs the assignment  $p \to \mu_p$  to satisfy compatibily criterion.



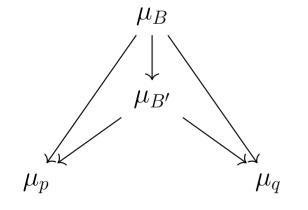


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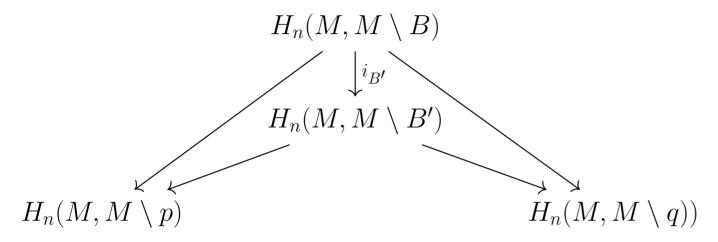




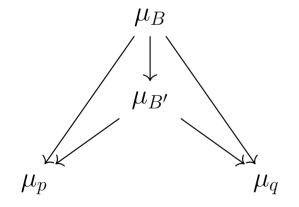
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if  $\mu_p = i_{p_*}(\mu_B)$  and  $\mu_q = i_{q_*}(\mu_B)$ ,

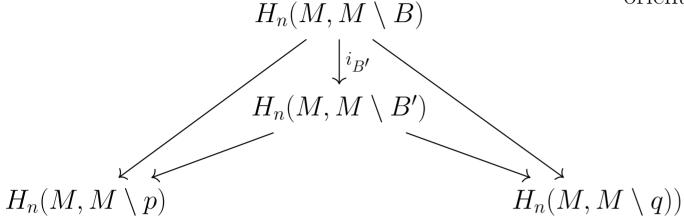


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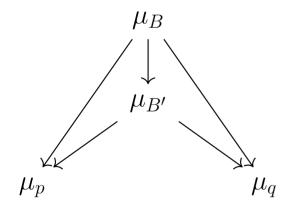


if  $\mu_p = i_{p_*}(\mu_B)$  and  $\mu_q = i_{q_*}(\mu_B)$ , then for any ball  $B' \subset B$ ,

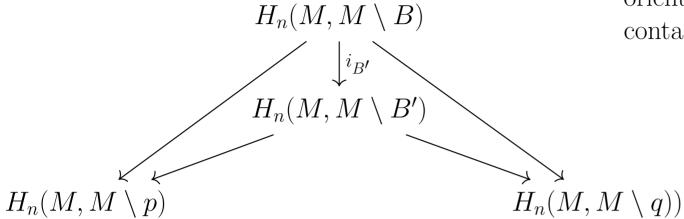
Informally, if a ball is responsible for compatible local orientations at two points,



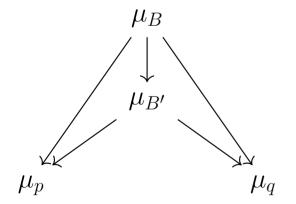
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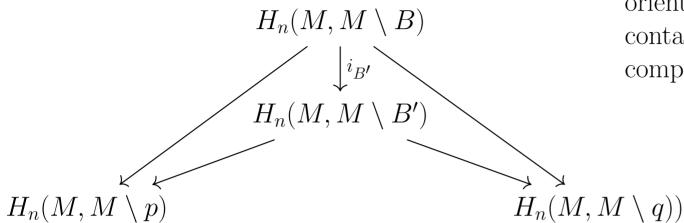


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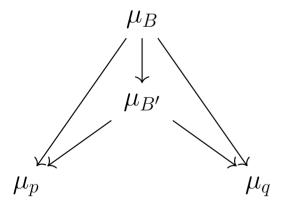


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Informally, if a ball is responsible for compatible local orientations at two points, then any smaller ball that contains those two points may also be used to ensure compatibility of the orientations at these points.

**Theorem.** There is a covering  $\pi: M_{\mathbb{Z}} \to M$ 

1.  $H_n(M, M \setminus p)$  is the fibre at p.

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For the other parts, observe that  $M_{\mathbb{Z}} = \sqcup M_n$  where  $\square$ 

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**Example.**  $s \in \Gamma_{\mathbb{Z}}(\mathbb{R}^n)$ 

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 $s = ms_0$ , where  $s_0$  is the orientation section and  $m \in \mathbb{Z}$ . For any ball B

Question: A compact.

A compact. How is  $\alpha \in H_n(M, M \setminus A)$  characterized by  $\alpha_x \in H_n(M, M \setminus x)$  for  $x \in A$ ?

Already seen:  $\alpha_x = 0$  for all  $x \in A$  is equivalent to  $\alpha = 0$ 

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Given any  $s \in \Gamma_{\mathbb{Z}}(M)$ , is there an  $\alpha \in H_n(M, M \setminus A)$  such that  $\alpha_x = s(x)$  for all  $x \in A$ ?

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Sketch of proof. Can we patch it up from simpler pieces?  $\Box$ 

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